



Lisbon Valley Mining Company LLC
Underground Injection Control (UIC) Class III Draft Area
Permit No. UTU-37-AP-5D5F693
Utah Department of Environmental Quality
Division of Water Quality
Public Comments and Responses
Public Hearing and Comment Period from:
October 31, 2020, to January 11, 2021

Prepared by the State of Utah,
Utah Department of Environmental Quality,
Division of Water Quality

November 8, 2021

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KEY ACRONYMS AND DEFINITIONS

ADEQ	Arizona Department of Environmental Quality
AMA	American Motorcyclists Association
BADCT	Best Available Demonstrated Control Technology
BC Aquifer	Dakota and Burro Canyon Formations, sandstone aquifers
BDR	Backcountry Discovery Routes
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
COHVCO	Colorado Off-highway Vehicle Coalition
Division	Utah Department of Environmental Quality, Division of Water Quality
DOG M	Utah Department of Natural Resources, Division of Oil, Gas and Mining
Draft Permit	Utah Division of Water Quality Class III Area Permit Underground Injection Control (UIC) Program, UIC Permit Number: UTU-37-AP-5D5F693. Permit issued to Lisbon Valley Mining Company, L.L.C., October 2020
DWQ	Utah Department of Environmental Quality, Division of Water Quality
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESSD	Eastland Special Services District
FSSOB	Fact Sheet and Statement of Basis

GRAMA	Government Records Access and Management Act
ISR	In Situ Recovery
LVMC	Lisbon Valley Mining Co. LLC
N Aquifer	Entrada, Navajo, Kayenta, and Wingate Formations, sandstone aquifers
NEPA	National Environmental Policy Act
POC	Point of Compliance
SDWA	Safe Drinking Water Act
SEIS	Supplemental Environmental Impact Statement
SGR	Shale Gouge Ratio
SITLA	School and Institutional Trust Lands Administration
UIC	Underground Injection Control
USDW	Underground Sources of Drinking Water
UWSC	Uranium Watch / Sierra Club

I. INTRODUCTION AND REGULATORY AUTHORITY TO AUTHORIZE PERMIT

LISBON VALLEY MINE AND THE PROPOSED ACTION

Brief Overview of the Lisbon Valley Mine and the Proposed Action

As outlined in detail in the Utah Department of Environmental Quality, Division of Water Quality (DWQ or Division) Draft Class III Area Permit (DWQ 2020a) and in the Fact Sheet and Statement of Basis (FSSOB) (DWQ 2020b), Lisbon Valley Mining Co. LLC (LVMC) currently operates an existing open pit and heap leach copper mine in south-central San Juan County, Utah (Figure 1). LVMC proposes to extend the life of the mine by expanding its operation to extract copper from mineralized zones of the Burro Canyon (BC) Aquifer (including the Dakota and Burro Canyon Formations). These zones are generally between 200 and 900 feet below the ground's surface in Lower Lisbon Valley, east of the current mining operation. Copper ores in these zones are currently uneconomical to develop using open pit mining methods.



Figure 1. Permit Area and Area of Review.

In order to extract ore from these zones in an economical manner, LVMC proposes to use in situ recovery (ISR) methods. This would involve constructing and operating Class III ISR injection wells (see Figure 1; DWQ 2020a). Details of the proposed project can be found in LVMC's application (LVMC 2019), in DWQ's Draft Class III Area Permit (DWQ 2020a), and in the FSSOB (DWQ 2020b).

LVMC will overproduce solution from production wells in order to maintain an inward hydraulic gradient and contain leach solutions within the Draft Permit area. Monitoring wells will be installed to ensure that no injectate or leach solution escapes from the wellfields and Draft Permit area. Any vertical migration of injectate or leach solution will be detected by deeper monitoring wells within the Morrison and Navajo Formations. Groundwater restoration will commence after ISR operations are completed by rinsing the wellfield with fresh water.

Lisbon Valley Hydrogeology and Copper Resources

As explained in the Draft Permit and FSSOB (DWQ 2020a, 2020b), the copper resources are hosted by the BC Aquifer, which is groundwater that occurs above the Morrison Formation aquitard in the sandstone Burro Canyon and Dakota Formations. The BC Aquifer (and its associated copper resources) extends eastward from the existing mine across Lisbon Valley and slightly across the state line into Colorado where the BC Aquifer ends at an erosional contact at the southeastern edge of Lisbon Valley. The BC Aquifer and copper resources also pinch out at an erosional contact on the western edge of Lisbon Valley near the existing mine. Economic and sub-economic copper concentrations in the BC Aquifer extend north to south across Lisbon Valley. They terminate at the normal faults that define the structure that formed Lisbon Valley.

The geology of Lisbon Valley isolates the occurrence of the BC Aquifer within Lisbon Valley. As a consequence, the groundwater system in Lisbon Valley is not connected to the regional groundwater system that exists at higher elevations (Avery 1986). The BC Aquifer is contained within a closed basin isolated by the regional geologic anticlinal structure within a graben bounded by faults with low hydraulic conductivity owing to the occurrence of fine-grained fault gouge material (Avery 1986). In addition, vertical confinement of injectate is enhanced by the Mancos and Morrison Formations, both of which have shale beds with low hydraulic conductivity. The Mancos and Morrison Formations lie stratigraphically above and below the BC Aquifer, respectively, and are considered to be aquitards in the regional hydrogeology of the area.

PERMIT APPLICATION AND AQUIFER EXEMPTION REQUEST

Permit Application

The LVMC in situ copper recovery project requires an Underground Injection Control (UIC) Class III area permit. LVMC submitted its initial application to the Utah DWQ in December 2019 (LVMC 2019). The application was reviewed by the Division,¹ and LVMC subsequently modified the application to provide updated technical information and to reflect changes requested by the Division. Supplemental information was furnished by LVMC prior to preparation of the Draft Permit by the Division in October of 2020. The Draft Permit (DWQ 2020a) is divided into three parts plus attachments that provide details and technical specifications on how permit conditions will be met by the applicant.

Aquifer Exemption Request

As part of the application for the Draft Permit, LVMC requested an Aquifer Exemption for a portion of the BC Aquifer where it intends to conduct operations. The Division published a public notice of the draft approval of this exemption pursuant to Aquifer Exemption criteria in Title 40 of the Code of Federal Regulations (CFR) § 144.7 and 40 CFR § 146.4.

Based on public comments received, the Division determined that the basis for the draft Aquifer Exemption was not clearly stated in the Draft Permit and FSSOB (DWQ 2020a, 2020b). As a result, the Division will revise and re-post the Aquifer Exemption request (Appendix M) for public notice.

The Aquifer Exemption is also subject to approval by the U.S. Environmental Protection Agency (EPA).

LEGAL AND REGULATORY AUTHORITY TO AUTHORIZE PERMIT

The UIC program is a body of regulations (40 CFR §§ 144, 145, 146, and 147) mandated by the Safe Drinking Water Act (SDWA) (42 U.S.C. § 300f et seq., 1974). The SDWA was established to protect the quality of drinking water in the U.S. The SDWA focuses on all waters actually or potentially available for drinking use, whether from aboveground or underground sources. The EPA promulgates regulations establishing minimum requirements, technical criteria, and standards for UIC programs to protect underground sources of drinking water (USDW) from endangerment by subsurface emplacement of fluids (40 CFR §§ 144–148) into UIC wells. The Utah Bureau of Water Pollution Control, now the Utah DWQ, received primacy from EPA on February 10, 1983, according to 40 CFR Parts 145 and 147 to administer the program in Utah under Section 1422 of the SDWA for Class I, III, IV, and V wells (the Utah 1422 UIC Program).

¹ For convenience, the term DWQ or Division refers to the Division of Water Quality and its Director.

The Division has reviewed the LVMC Draft Permit pursuant to the Utah UIC administrative rules in Utah Administrative Code R317-7 et. seq. and federal regulations in Title 40 of the CFR incorporated by R317-7-1. The Division found that the Draft Permit complies with the regulatory structure, as explained therein and further explained in the responses to comments presented in this document.

COMMENT PERIOD AND PUBLIC PARTICIPATION PROCESS FOR THE DRAFT PERMIT

Initial Public Comment Period

Public notice of the public comment period was published on the Division's website on October 31, 2020, and in the *San Juan Record* on November 4, 2020. The notice stated that the Draft Permit, including the FSSOB and Aquifer Exemption Request, were available on the Division's website <https://deg.utah.gov/water-quality/lisbon-valley-mining-co-llc>, and that the Division was soliciting public comments for 30 days according to Utah Administrative Code R317-7-13 and 40 CFR § 124.10. The public participation process was described in the FSSOB published on the Division's website with the Draft Permit.

Public Hearing

DWQ received comments requesting a public hearing. In response to those comments, the Division held a public hearing on November 23, 2020. The Division advertised notice of the Public Hearing in the *San Juan Record* on November 18, 2020, and also posted the notice on its website: <https://deg.utah.gov/water-quality/lisbon-valley-mining-co-llc>. The goals of the public hearing were to provide information on the Draft Permit and receive public comments.

The hearing was held by the Division on November 24, 2020, and began at 7:30 PM. Beginning at 7:00 PM, prior to the formal hearing, the Division gave a presentation with PowerPoint slides describing the Draft Permit, Aquifer Exemption Request, and basis for issuance of the Draft Permit. The Hearing Officer also informed attendees that they could provide comments on the Draft Permit and Aquifer Exemption Request during the hearing and after the hearing via the normal public comment process until the end of the public comment period. Thirteen people presented oral comments during the public comment part of the hearing (Table 1).

Table 1. Public Hearing on November 24, 2020: Oral Comments

Caller Name	Caller No.	Group Response No.
Bruce Adams	1	1, 2, 7, 9,
David Roccaforte	2	4, 6, 9, 10
Francine Osikowicz	3	1, 5, 6, 8
Tayna Zilberberg	4	1, 5, 4, 8
Scott Stevenson	5	1, 3, 6
Mike and Joan Wilcox	6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Curtis Wilcox	7	1, 2, 5
Sarah Fields	8	3,4,7
Jim Blankenagel	9	1, 5,7
RL Wilcox	10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Carly Ferro	11	1, 3, 4, 8
Julie Stevenson	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Alysen Tarrant	13	No response needed. Expressed confidence in LVMC, the regulatory agency, and the technical approach.

Note: A full recording of the hearing is available at the Division of Water Quality’s website:

<https://deq.utah.gov/water-quality/lisbon-valley-mining-co-llc>.

Extension of the Public Comment Period

Following the public hearing, the Division received requests to extend the public comment period for 60 days. In response, the Division extended the comment period for an additional 38 days from December 4, 2020, to January 11, 2021. Public notice of the extension was published on December 9, 2020, in the *San Juan Record* and published prior to that date on the Division’s website.

Public Records Request

On November 25, 2020, a Government Records Access and Management Act (GRAMA) request was received for additional documents, and the request was fulfilled on December 14, 2020. Additional documents provided in response to the GRAMA request, specifically the permit application package, were posted on the public notice page on the Division’s website as a courtesy to other interested parties.

Comments Received

Public comments were accepted throughout the comment period, which ran for 68 days. All written comments were received by e-mail or post and are compiled in original form in Attachment A of this document and can be accessed at the Division’s website <https://deq.utah.gov/water-quality/lisbon->

[valley-mining-co-llc](#). The public comments are indexed by name based on order of receipt by date and time, with some minor exceptions in the ordering of date received.

The comments on the Draft Permit and its attachments (including the Aquifer Exemption Request) are divided into two types: (1) Group Comments and (2) Individual/Specific Comments. In the Group Comments section, DWQ provides responses to concepts that appeared repeatedly in the public comments. The Group Comment responses are referred to in the Individual/Specific Comment Response section where applicable, along with more specific responses as needed to fully respond to the individual comment.

In total, the Division received 162 written comments (Table 2). Comment number 71 was later withdrawn, making an adjusted total of 161 written comments. Some individuals submitted comments on more than one occasion; each such submission is given its own line in Table 2. DWQ has prepared 10 Group Comment responses to address 130 comments that had common concerns and 27 specific responses to address specific/individual concerns and questions.

Table 2. Written Comments and the Applicable Group and Specific Responses

Comment No.	Name	Date	Group Response No.	Specific Response No.
1	Shane Deeter	31-Oct-2020	1, 6	
2	Troy Pehrson	31-Oct-2020	1, 6	
3	Kathy Rogers	31-Oct-2020	1, 6	
4	JL Williams	31-Oct-2020	1, 2, 6, 8, 9	
5	Roy Gilbreth	31-Oct-2020	1, 7	
6	Arthur Adair	31-Oct-2020	1, 6	
7	Karah Nay	1-Nov-2020	1, 2, 6, 9	
8	Cindy Sue Hunter	1-Nov-2020	1, 6, 8	
9	Deanna King	1-Nov-2020	1, 5, 7	
10	Cody Deeter	1-Nov-2020	1	
11	Ralph Nentwich	1-Nov-2020	1	
12	Steve Wilcox Clement	1-Nov-2020	1, 6	
13	Matt Beh	1-Nov-2020	1	
14	Arne Hultquist	2-Nov-2020	5, 7	
15	Susan Smith	2-Nov-2020	7	
16	Amanda Shupe	2-Nov-2020	1, 6	
17	Steve Deeter	2-Nov-2020	N/A	1
18	Taralee Knight	2-Nov-2020	1, 6	

Comment No.	Name	Date	Group Response No.	Specific Response No.
19	Kelly and Julie Green	2-Nov-2020	N/A	2
20	Anthony Mancuso	2-Nov-2020	1, 6, 8	
21	Kerry Kelly	2-Nov-2020	1, 2	
22	O. Sierra Lopez following up on comment from RL Wilcox	2-Nov-2020	1, 8	
23	Maxine and Steve Deeter	2-Nov-2020	N/A	1
24	Kelly and Julie Green	2-Nov-2020	N/A	2
25	Kim Halls	3-Nov-2020	1, 2	
26	Austin Troy Wilcox	3-Nov-2020	1, 6, 8	
27	Cinda Culton	4-Nov-2020	1, 5, 7	
28	William Love	5-Nov-2020	1, 3	3
29	William Love	5-Nov-2020	1, 3	3
30	Mike and Joan Wilcox	2-Nov-2020	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	
31	Athena Spigner	5-Nov-2020	1, 2, 6, 8, 9	
32	Brendee Kennah	7-Nov-2020	1, 5, 6, 7	
33	Skeet and Teressa Lammert	7-Nov-2020	1, 5, 6, 7	
34	Dave Focardi	5-Nov-2020	1, 5, 10	4
35	William Love	8-Nov-2020	3	
36	Richard Collins	9-Nov-2020	1, 2, 5	
37	William Love	5-Nov-2020	5	
38	Scott Stevenson	6-Nov-2020	NA	5
39	Scott Stevenson	8-Nov-2020	NA	5
40	Janet Ross	10-Nov-2020	1, 3, 5, 7	6
41	Mike and Joan Wilcox	10-Nov-2020	1, 5, 9, 10	
42	RL Wilcox	11-Nov-2020	2	
43	Adam Oris	12-Nov-2020	1, 6	
44	Allen and Erin Barry	12-Nov-2020	1, 5, 6, 7	
45	Kim Halls	12-Nov-2020	1, 5, 6, 7	
46	Paul Baker	13-Nov-2020	1	
47	Lisa Reynard	15-Nov-2020	1, 2, 6	
48	Janet Ross	15-Nov-2020	1, 3, 5, 7	6
49	Vincent j Battaglia	16-Nov-2020	1	
50	Kraig Black	16-Nov-2020	1	
51	Marc LaPine	17-Nov-2020	1, 2, 4, 5, 6, 7, 9	

Comment No.	Name	Date	Group Response No.	Specific Response No.
52	Matthew Cozart	17-Nov-2020	1, 5, 6, 7	
53	Francine Osikowicz	19-Nov-2020	1	
54	Andrew A. Jones Jr.	22-Nov-2020	1	
55	Russ Rogers	22-Nov-2020	1, 6	
56	Matt White	22-Nov-2020	1, 6	
57	Robert Boohear	23-Nov-2020	1, 2, 6	
58	Scott Lee	23-Nov-2020	1, 2, 6	
59	Steven Taylor	23-Nov-2020	1, 5, 6, 7	
60	Naomi Tweddle	23-Nov-2020	1, 5, 6, 7	
61	Jarrid Hadland	23-Nov-2020	1, 6	
62	Scott Williams	23-Nov-2020	1, 5, 6	
63	Alan Norton	23-Nov-2020	1	
64	Vince Commiskey	23-Nov-2020	1, 5, 6, 9	
65	Matt Larson	23-Nov-2020	1, 6	
66	Bob Krantz	23-Nov-2020	N/A	7
67	Michael Dyke	23-Nov-2020	1, 5, 6	
68	Dave Sharpe	23-Nov-2020	1, 2, 5, 6	
69	Rob Watt	24-Nov-2020	1, 6	
70	Sarah Fields	24-Nov-2020	3	
71	Comment Withdrawn	N/A	N/A	8
72	Bill Alspach on behalf of D.E. Riddle	24-Nov-2020	1, 6	
73	Hilary Buchanan	24-Nov-2020	1, 2, 6	
74	Inna Thorn	24-Nov-2020	N/A	9
75	Nick Sandberg	24-Nov-2020	1	
76	Dennis Stajic	24-Nov-2020	1	
77	Richard Collins	25-Nov-2020	1, 2, 5, 6	
78	Scott Stevenson	25-Nov-2020	1, 4, 5, 6, 10	
79	Joan Wilcox	25-Nov-2020	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	
80	Mike Wilcox	25-Nov-2020	1, 4, 6, 7, 8	
81	Sarah Fields	25-Nov-2020	1	
82	Jerry Abboud	25-Nov-2020	N/A	10
83	Chris Shotwell	25-Nov-2020	1, 6	
84	Alden E. Hingle Jr	25-Nov-2020	1, 6	
85	Greg lafeliece	26-Nov-2020	1, 4, 6, 10	

Comment No.	Name	Date	Group Response No.	Specific Response No.
86	Andy Greene	27-Nov-2020	1, 6	
87	David Roccaforte	27-Nov-2020	1, 2, 5, 6, 9	
88	Francine Osikowicz	27-Nov-2020	1, 3, 5, 6, 8, 9	
89	Matt Prowant	27-Nov-2020	1, 6	
90	Michael Bielecki	28-Nov-2020	1, 6	
91	Nace Salomone	28-Nov-2020	1, 6	
92	Greg Aumann	26-Nov-2020	1, 3, 5, 6, 7	
93	Barak Naggan	30-Nov-2020	1, 6	
94	Paul Anzalone	30-Nov-2020	1	
95	Don Buscarello	30-Nov-2020	1, 2, 5, 6, 9	
96	Bob Crossman	30-Nov-2020	1, 6	
97	Thane Davis	30-Nov-2020	1, 6	
98	Jeff Graser	30-Nov-2020	1, 2, 6	
99	Carly Ferro	30-Nov-2020	1	
100	Sarah Fields	30-Nov-2020	3, 4	
101	Anthony Keithley	30-Nov-2020	1, 5, 6	
102	Fred DeJoode	30-Nov-2020	1, 6	
103	Julie Stevenson	30-Nov-2020	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	
104	Sam Kaffine	30-Nov-2020	1	
105	Scott Stevenson	30-Nov-2020	1	
106	Chris Oppold	30-Nov-2020	1, 6	
107	Anthony Shepperdson	30-Nov-2020	1, 6	
108	Robert F. D. Stansfield	30-Nov-2020	1, 2, 6	
109	RL Wilcox	30-Nov-2020	N/A	12
110	Chris Vasiliotis	30-Nov-2020	1, 6	
111	Derren Thompson	1-Dec-2020	1, 5, 6	
112	Darrell Hiatt	1-Dec-2020	1, 2	
113	Sarah Fields	1-Dec-2020	8	
114	William Bickel III	1-Dec-2020	1	
115	Sarah Fields	25-Nov-2020	1	
116	Chris Burns	1-Dec-2020	1, 5, 6	
117	RL Wilcox	1-Dec-2020	N/A	13
118	Marc Silverthorne	1-Dec-2020	1, 6	
119	Dean Duguay	1-Dec-2020	1, 2, 5, 6	
120	Christian Tarr	1-Dec-2020	1, 6	

Comment No.	Name	Date	Group Response No.	Specific Response No.
121	Jim Wallin	2-Dec-2020	1, 6	
122	Debra Mckee	3-Dec-2020	1, 5, 6	
123	Peter W. Stockus	3-Dec-2020	N/A	14
124	Scott Stevenson on behalf of Kenneth Maryboy	3-Dec-2020	N/A	15
125	Tanya Zilberberg	2-Dec-2020	N/A	16
126	Norm Yoast	4-Dec-2020	1, 6	
127	Greg Babush	4-Dec-2020	1, 5, 6	
128	Ulrich Bischoff	4-Dec-2020	1, 5, 6, 9	
129	Austin Gore	4-Dec-2020	1, 5, 6	
130	Trevor LaBorde	4-Dec-2020	1, 4, 5, 6, 7	
131	J Sheets	5-Dec-2020	1, 6	
132	Holly Nelson	5-Dec-2020	1, 6	
133	Skip Mascorro	7-Dec-2020	1, 4, 5, 6	
134	Ivan Weber	7-Dec-2020	N/A	17
135	Nate Wessel	7-Dec-2020	1, 6	
136	Mel Tooley	8-Dec-2020	1, 2, 4, 5, 6, 9, 10	
137	Richard Holcroft	11-Dec-2020	1, 6, 8	
138	David Roccaforte	13-Dec-2020	1	18
139	Annie Hughes	16-Dec-2020	1, 2, 4, 5, 9	
140	Janet Curley	20-Dec-2020	1, 2, 4, 5, 6, 8, 9	
141	Jorge Jestes	20-Dec-2020	1, 5, 6	
142	Casey Reinking	20-Dec-2020	1, 2, 4, 5, 6, 9	
143	Jay Cortez	22-Dec-2020	1, 2, 5, 6, 9	
144	Gary Smith	23-Dec-2020	1, 2, 5, 9	
145	Matthew Maki	24-Dec-2020	1, 5, 6	
146	Kerry Bertsch	28-Dec-2020	1, 2, 4, 5, 6, 9	
147	Julie Stevenson	6-Jan-2021	N/A	11

Comment No.	Name	Date	Group Response No.	Specific Response No.
148	Kristin Vinci Laura Cotts J.R. Bess Eric Ewert Leigh Fullmer Carmela Sudano Craig Gasser Adam Stevenson Heather Jones Greg Thorne Carol Wright Peggy Pierce	7-Jan-2021	1, 3, 5, 6, 7, 9, 10	
149	Kathryn Marti Carmen Mas Ken Smith Marion Klaus Maurena Grossman Debra Csenge Robert Nyman Gene Ammarell	8-Jan-2021	1, 3, 5, 6, 7, 9, 10	
150	Kenneth Welsh	8-Jan-2021	1, 5, 6	
151	Shirley Ray Reba Reiser Stanley Holmes C. Clark David R. Smith Devin Tomson-Moylan M. Honer-Orton Nicola Nelson Jacob Baker	9-Jan-2021 10-Jan-2021	1, 3, 5, 6, 7, 9, 10	
152	George R. Stevenson Jr.	10-Jan-2021	N/A	19
153	J. David Roccaforte	8-Jan-2021	N/A	20
154	L Lynne Lewis	11-Jan-2021	N/A	21

Comment No.	Name	Date	Group Response No.	Specific Response No.
155	J. David Roccaforte Mike and Joan Wilcox Julie and Scott Stevenson RL Wilcox Francine Osikowicz	8-Jan-2021	N/A	22
156	Nate Osikowicz	11-Jan-2021	1, 2, 6, 9, 10	
157	Steve Deeter	12-Jan-2021	1, 5, 6, 7, 8, 10	24
158	Sarah Fields	11-Jan-2021	N/A	25
159	RL Wilcox	10-Jan-2021	1, 2, 3, 5, 6, 8	23
160	Sarah Fields	15-Jan-2021	N/A	25
161	William P. Johnson	5-Jan-2021	1, 5, 6, 7, 8	26
162	Conner Peterson, sent on behalf of R. Logan Wilde	4-Jan-2021	N/A	27

NEXT STEPS IN THE PERMIT PROCESS

After reviewing the public comments, the Draft Permit (DWQ 2020a), the Draft FSSOB (DWQ 2020b), and associated documents in the permit record, DWQ has determined that more detail and specification are needed with respect to two aspects of the Draft Permit: (1) the proposed Aquifer Exemption Request (DWQ 2020a: Attachment M) and (2) the proposed financial assurance mechanism associated with the Draft Permit (DWQ 2020a: Attachment J). Specifically, the Division requested that the operator obtain and provide a third-party financial assurance estimate. The Division has revised the Aquifer Exemption Request to more clearly outline the basis for approval of the exemption request. These two elements of the permit will be available for a second round of public comment.

This remainder of this document provides the Division’s responses to comments that fall outside the scope of the two aspects of the Draft Permit described in the paragraph above. Once the Draft Permit has been updated, it will be republished for public comment on the two elements identified above (Attachments M and J). No other changes have been made to the Draft Permit and therefore the remainder of the permit is not subject to additional comment.

II. GROUP COMMENTS AND RESPONSES

This section presents the Division's responses to the Group Comments, which are comments that appeared repeatedly in the public comments. The comments are presented in italics and are typically paraphrased based on statements from multiple commenters.

GROUP COMMENT 1

In situ copper recovery should not occur in Lisbon Valley or the Burro Canyon (BC) aquifer because it will contaminate groundwater used by local residents and ranchers for drinking water, livestock watering, wildlife, and recreational visitors and hosts.

Group Comment 1: Division Response

The governing UIC statute and regulations do not allow the Division to consider general impacts to ranching, recreation, or the local economy so long as UIC regulations and applicable conditions in the Draft Permit are met by LVMC. The portion of the BC Aquifer covered by the Aquifer Exemption Request does not serve any existing wells or uses protected by the SDWA and is not suitable for future drinking water use according to the SDWA. Additionally, the Draft Permit requires that LVMC monitor the proposed Aquifer Exemption Request boundaries for any unauthorized use outside the boundaries.

The Division has found that in situ copper recovery under the conditions and specifications prescribed by the Draft Permit meet the regulatory requirements in Utah Administrative Code R317-7 and associated federal regulations incorporated by reference. Specifically, the portion (i.e., volume) of the BC Aquifer (Dakota and Burro Canyon Formations) that exists in lower Lisbon Valley is eligible for an Aquifer Exemption under SDWA UIC regulations (40 CFR § 144.7 and 40 CFR § 146.4). That portion and volume of the BC Aquifer does not contain USDWs or drinking and livestock water wells and will not in the future serve as a source of drinking water according to the SDWA regulations because LVMC demonstrated that it contains minerals that are expected to be commercially producible. Following in situ copper recovery, LVMC will restore groundwater quality concurrently in that volume of the BC Aquifer and in the wellfield where copper recovery took place.

The Division maintains that the substantive basis for approving the Aquifer Exemption Request is accurate. However, the volume and content of public comment on the Aquifer Exemption Request made clear that the procedure for the Aquifer Exemption Request in the Draft Permit and FSSOB was not clearly explained. Therefore, additional information will be added to the Draft Aquifer Exemption Request, and the revised Aquifer Exemption Request will then be made available for a new round of public comment.

GROUP COMMENT 2

Lisbon Valley Mining Company LLC has a poor financial performance and owes back taxes.

Group Comment 2: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, which require financial assurance but do not otherwise impose any requirements about financial or tax status. Specifically, 40 CFR § 144.28 requires demonstration and maintenance of financial responsibility and resources to close, plug, and abandon the UIC operation until well(s) are plugged and abandoned, converted, or transferred and covered by a new financial assurance mechanism by the new owner or operator. The UIC financial responsibility requirements are covered by Specific Permit Condition III.L (DWQ 2020a), which lays out the requirements for financial coverage to ensure sufficient financial means to carry out all protective and UIC wellfield closure conditions in the Draft Permit in case of LVMC or future owner insolvency.

Based on public comments, the Division found that Attachment J of the Draft Permit, which provides the specific mechanism (surety bond) and estimated cost with corresponding coverage amounts to comply with Permit Condition III.L, contained insufficient detail to support the accuracy of the estimated financial assurance amount (DWQ 2020a: Section III and Attachment J). Based on this finding, the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

GROUP COMMENT 3

In situ copper recovery is not yet approved in the record of decision by the Bureau of Land Management for the current Lisbon Valley Mine plan of operations.

Group Comment 3: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, including federal requirements such as National Environmental Policy Act (NEPA) permit status and compliance. These requirements fall under the authority of the Bureau of Land Management (BLM). A NEPA decision, including a record of decision from the BLM, is not required prior to issuance of the UIC Class III Area Permit for in situ copper recovery.

GROUP COMMENT 4

The Lisbon Valley Mine has not adequately reclaimed mine spoils according to the Utah Department of Natural Resources Division of Oil, Gas and Mining requirements.

Group Comment 4: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, including surface operations regulated by the Utah Division of Oil, Gas and Mining (DOG M). A mining permit from DOGM is not required prior to issuance of the UIC Class III Area Permit for in situ copper recovery. Surface reclamation is covered by DOGM requirements, not the UIC Program, statute, or regulations.

GROUP COMMENT 5

How will Lisbon Valley Mine manage in situ copper recovery hydrology and containment and protect groundwater resources?

Group Comment 5: Division Response

The conditions in Draft Permit Part III.F and Attachment E, explain in detail how hydrology and containment will be managed to protect groundwater resources. In short, injection water and leach solutions will be contained in the ISR wellfield by overproducing or pumping of water from recovery wells to maintain an inward hydraulic gradient (see DWQ 2020a: III.F and Attachment E). Continuous monitoring of injection and production rates and hydraulic head in the injection and recovery wells (see DWQ 2020a: III.G and Attachment F) will ensure that the operating parameters meet the conditions of the Draft Permit, Part III.F and Attachment E, which are in place to protect USDWs according to the SDWA. The UIC Financial Assurance requirements are covered in the Draft Permit Part III.L and Attachment J, which lay out the provisions for financial coverage to ensure that the Division has the financial means to ensure that all protective and reclamation conditions in the Draft Permit are met in case of LVMC or future owner insolvency.

GROUP COMMENT 6

The in situ copper recovery project will negatively impact ranching, recreation, and the local economy.

Group Comment 6: Division Response

The Division's Draft Permit decision must be limited to the governing statute and rules, which allow for consideration of USDWs, both current and future potential sources of drinking water, none of which exist in this case. The governing UIC statute and regulations do not permit the Division to consider general impacts to ranching, recreation, or the local economy so long as UIC regulations and applicable Draft Permit conditions are met by LVMC.

GROUP COMMENT 7

How will Lisbon Valley protect groundwater resources in the BC and N aquifers outside the aquifer exemption zone? (The term “N aquifer” refers to the Entrada, Navajo, Kayenta, and Wingate Formations, which are sandstone aquifers.)

Group Comment 7: Division Response

Both natural geologic structures and institutional controls are required by the Draft Permit to protect groundwater resources outside the project area and proposed Aquifer Exemption boundary (DWQ 2020a: III.F and Attachment E). The natural hydrology and geology are well suited for ISR because there are natural hydraulic barriers on three sides (Figure 2). All groundwater resources outside of Lisbon Valley are upgradient, so no leach solutions can leave the valley.



Figure 2. Physiographic map of Lisbon Valley and BC Aquifer groundwater. (Source: Figure recreated from Figure 3.22 on page 62 of the LVMC Class III Underground Injection Control Permit Application Technical Report (LVMC 2020: 62).

GROUP COMMENT 8

What is the basis for the Aquifer Exemption?

Group Comment 8: Division Response

The Division maintains that the substantive basis for approving the Aquifer Exemption Request is accurate. However, the volume and content of public comment on the Aquifer Exemption Request made clear that the procedure for the Aquifer Exemption Request presented in the Draft Permit and FSSOB was not clearly explained. Therefore, additional information will be added to the Draft Aquifer Exemption Request, and the revised Aquifer Exemption Request will then be made available for a new round of public comment.

GROUP COMMENT 9

How will groundwater protection be ensured if Lisbon Valley Mining Company goes bankrupt?

Group Comment 9: Division Response

The resources necessary to carry out monitoring and groundwater restoration are secured by financial assurance instruments as described in the Draft Permit Part III.L and Attachment J (DWQ 2020a). In response to public comment, the Division has requested a more detailed bond estimate from the operator, which will be published for public notice and comment once provided and approved by the Division.

GROUP COMMENT 10

How will surface spills be prevented and cleaned up?

Group Comment 10: Division Response

Surface operations at the facility do not fall under the governing UIC statute and regulations and will be addressed by requirements from other permitting agencies. Additionally, spills that occur at the surface of this facility in violation of surface operations permits will be subject to enforcement as an illegal discharge. Specifically, the spill must be reported to the Division in accordance with Utah Code Section 19-5-114 and is subject to enforcement action, interim response, and corrective action in accordance with R317. Penalties up to \$10,000 per day may be applied as part of the enforcement action as applicable under Title 19 and R317.

III. INDIVIDUAL/SPECIFIC COMMENTS AND RESPONSES

This section presents the Division's responses to Individual and Specific Comments. The comments are presented in italics and are reported verbatim. Some of the comments are divided into subparts to make it easier for the reader to connect specific parts of longer comments with the relevant portion of the Division's response. Please note that footnotes associated with comments from the public retain the numbering in the original comment, which means footnote numbering in this section is not entirely sequential. Some of the Division's responses in this section refer to responses in the Group Comments section of this document.

COMMENT 1: MAXINE AND STEVE DEETER, PRIVATE CITIZEN, NOVEMBER 2, 2020

I am writing with two concerns that deal with water in San Juan County, Utah. First I want to address the Lisbon Valley Copper Mine in Lisbon Valley Utah. They have applied to for a permit to use Situ type mining which means the company will inject acid into the aquifer, pump it out to collect the copper. Mike and Joan Wilcox have lived in the lower of Lisbon Valley for about 30 years. They are the 3rd generation ranchers in that area and have a son and grandson that are ranching there also, 4th and 5th generation. The Wilcox family were fortunate enough a few years ago to drill a well that has been used for livestock, wildlife and their home. The fear is this Situ type of mining will contaminate the well and that water from their well will no longer be safe for personal use, livestock and wildlife watering. The mine claims there is no public water wells within 14 miles, but there are at least 2 domestic water wells within 3 miles of this proposed action.

Second, in La Sal, Utah, a small old ranching town that was developed by Charlie Redd is now growing very fast. The aquifer that the wells used for domestic use depends on the amount of snowfall that falls on the La Sal Mountain. We have been a drought so many years now I have lost count of them. My concern is two fold. Legacy Subdivision has applied to build a subdivision that will have 117 new homes and families on approximately 120 acres. That could potentially mean 117 new water wells plus 117 new septic tanks or systems installed. The average depth of our wells is about 200 plus or minus feet. My son's well has dropped 60 feet in the last few years. We had a well drilled in 2004 for the La Sal Community Center and La Sal Elementary School. That well was producing 56 gpm when drilled. It now is producing 12 gpm. I am not against someone developing the land and adding people to our population, but I do worry about our aquifer will dry up leaving many of us without water. Also, I worry about that many septic systems so close together that they could possibly contaminate our aquifer too. A well could be drilled into the Navajo sandstone that is about 1000 feet and could very easily have more than enough water for the subdivision. I also believe a sewer plant for the whole subdivision should be considered in order to alleviate any possible contamination to the aquifer.

I would appreciate any help you might suggest to help us on both of my concerns.

Comment 1: Division Response

The first part of this comment will be addressed by the Division's revised draft Aquifer Exemption Request, as described in Group Comment 8 above, which will be republished for public notice and comment.

The second part of this comment concerns potential effects of the LVMC ISR recovery project on the groundwater resources used by the town of La Sal and its subdivisions. The portion of the BC Aquifer requested for exemption is within a small and locally confined volume of the larger BC Aquifer system that is hydrologically isolated from the regional BC Aquifer and the Entrada, Navajo, Kayenta, and Wingate Formations (sandstone aquifers collectively referred to as the N Aquifer) (Avery 1986) that are used by communities, like La Sal, outside of Lisbon Valley. The Division does not have the authority to regulate beyond the governing UIC statute and regulations and thus does not have the authority to consider water resources outside those in the Aquifer Exemption Request boundary. Furthermore, the Division cannot consider community services like common sewers as part of the UIC permitting program.

In sum, UIC regulations do not allow the Division to consider community planning for sewer and water resources as requirements for this Permit.

COMMENT 2: KELLY AND JULIE GREEN, PRIVATE CITIZENS, NOVEMBER 2, 2020

I am writing with two concerns that deal with water in San Juan County, Utah. First I want to address the Lisbon Valley Copper Mine in Lisbon Valley near La Sal, Utah. The mine owners have applied for a permit to use Situ type mining which means the company will inject acid into the aquifer, and pump it out to collect the copper. Mike and Joan Wilcox have lived in the lower end of Lisbon Valley for about 30 years. They are the 3rd generation ranchers in that area and have a son and grandson that are ranching there also, 4th and 5th generation. The Wilcox family were fortunate enough a few years ago to drill a well that has been used for livestock, wildlife and their home. The fear is this Situ type of mining will contaminate the well and that water from their well will no longer be safe for personal use, livestock and wildlife watering. They live only 3 miles from the mine and there are others who live nearby as well. Allowing the mine to drill and extract using this method is of grave concern and a public hearing needs to be held as many citizens are opposed to what the mining company is proposing.

Second, in La Sal, Utah, the aquifer that the wells use for domestic water use depends on the amount of snowfall on nearby La Sal Mountain. We have been experiencing drought for many years and the aquifer's ability to recharge is affecting current existing wells. My concern is two fold. Legacy Subdivision has applied to build a subdivision that will have 117 new homes and families on approximately 120 acres. That could potentially mean 117 new water wells plus 117 new septic tanks or systems installed. The average depth of our wells is about 200 plus or minus feet. My neighbors well has dropped 60 feet in the last few years. A well was drilled in 2004 for the La Sal Community Center and La Sal Elementary School. That well was

producing 56 gpm when drilled. It now is producing 12 gpm. I am not against someone developing the land and adding people to our population, but I do worry that our aquifer will dry up leaving many of us without water. Also, I worry that many septic systems so close together could possibly contaminate our aquifer. A possible solution might be that a well could be drilled into the Navajo sandstone that is about 1000 feet and could very easily have more than enough water for the subdivision. I also believe a sewer plant for the whole subdivision should be considered in order to alleviate any possible contamination to the aquifer. Both of these alternatives are expensive but need to be considered to protect existing water rights.

A water aquifer study needs to be conducted to determine what is potentially available and the continuation of drilling without that knowledge to plan responsibly for future growth is critical for responsible growth. As Utah owns the water rights, policy needs to be adopted so that existing residents' water usage will be protected. A fair and comprehensive plan that involves the state and county planning committee is critical.

I would appreciate any help you might suggest to help us on both of my concerns and would be willing to meet with you about what is happening in the La Sal area.

Comment 2: Division Response

The first part of this comment will be addressed by the Division's revised draft Aquifer Exemption Request, as described in Group Comment 8 above, which will be republished for public notice and comment.

The second part of this comment concerns potential effects of the LVMC ISR recovery project on the groundwater resources used by the town of La Sal and its subdivisions. The portion of the BC Aquifer requested for exemption is within a small and locally confined volume of the larger BC Aquifer system that is hydrologically isolated from the regional BC Aquifer and N Aquifer (Avery 1986) that are used by communities, like La Sal, outside of Lisbon Valley. The Division does not have the authority to regulate beyond the governing UIC statute and regulations and thus does not have the authority to consider water resources outside those in the Aquifer Exemption Request boundary. Furthermore, the Division cannot consider community services like common sewers as part of the UIC permitting program.

In sum, UIC regulations do not allow the Division to consider community planning for sewer and water resources as requirements for this Permit.

COMMENT 3: WILLIAM LOVE, PRIVATE CITIZEN, NOVEMBER 5, 2020

A public hearing needs to be held in San Juan County for the proposed Lisbon Valley Mine. Your data used to evaluate the proposal on your website is incomplete as it does not include the EIS from 1997 by the Department of the Interior. This EIS is 576 pages long and includes information on Faulting (page133),

springs (page 145), hydraulics (page151) and geological layers (Page 120). All of the above information is pertinent to your decision and needs to be discussed at a public meeting.

Website for information (Second item)

<https://deq.utah.gov/public-notices-archive/water-quality-public-notices>

Comment 3: Division Response

A public hearing was held virtually on November 24, 2020. An in-person hearing was not possible due to the COVID-19 pandemic.

The information in the 1997 environmental impact statement (EIS) (BLM 1997) was considered in the Division's review because it was incorporated into LVMC's Technical Report (LVMC 2020) submitted with its permit application. According to David Pals, BLM Assistant Field Manager: "The Bureau of Land Management Moab Field Office has not received a proposal for mining in Lower Lisbon. The Lisbon Valley Mining Company currently has an Exploration Plan of Operations for exploration drilling and groundwater monitoring in the area (analyzed in DOI-BLM-UT-Y010-2015-0158-EA and DOI-BLM-UT-Y010-2017-0090-EA, respectively). You are correct in the statement the 1997 EIS would not cover the in situ mining in Lower Lisbon Valley. Once a complete proposal is received, the BLM will determine the appropriate level of NEPA required."

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, including federal NEPA permit status and compliance. These requirements are under the authority of federal regulatory agencies, not the state. A NEPA decision is not required prior to the Division's issuance of the UIC Class III Area Permit for in situ copper recovery.

COMMENT 4: DAVE FOCARDI, PRIVATE CITIZEN, NOVEMBER 5, 2020

Comment 4.1

I live in San Juan county and hearing about insitu copper recovery raises some immediate concerns.

Is there a publicly available copy of their engineering documents regarding the injection and recovery of water?

Comment 4.1: Division Response

The Division has posted all the technical reports and information supplied by LVMC in its permit application on its website <https://deq.utah.gov/water-quality/lisbon-valley-mining-co-llc>. Water

production and consumption records are not required in the UIC permit application or for permit authorization.

Comment 4.2

My 25 years in the oilfield as a wellsite geologist inform me that the best laid plans regarding drilling, injection, and recovery provide the opportunity for many mishaps.

Particularly, the 'rinsing process' sounds like a lot of hope. Do they provide the quantities of water required at each stage?

Comment 4.2: Division Response

The conceptual rinsing and groundwater restoration process is described in Part III.J and Attachment H of the Draft Permit (DWQ 2020a). Water consumption rates of the restoration process are not required in the reporting conditions of the permit (see DWQ 2020a: III.H and Attachment F). Leach solutions will be controlled as described in Group Response 7. Following in situ copper recovery, groundwater will be restored in the BC Aquifer until water quality parameters have reached levels that are technically and economically feasible to achieve per Part III.G and Attachment H of the Draft Permit (DWQ 2020a).

Comment 4.3

How do they plan on containing the injection water in the mineralized zones while it picks up the copper?

Comment 4.3: Division Response

The operating conditions and plans are provided in Part III.F and Attachment E of the Draft Permit (DWQ 2020a). Hydraulic control of the wellfield must be maintained by injecting a smaller volume of lixiviant into the wellfield injection interval than is pumped out. Hydraulic control will be verified by continuous monitoring of injection rate and volume and the measurement of water levels in the wellfield perimeter monitoring well ring to verify a cone of depression per Draft Permit conditions in Part III, Sections F and G (DWQ 2020a). This is also consistent with the Arizona Department of Environmental Quality (ADEQ) Best Available Demonstrated Control Technology (BADCT) guidance for copper ISR mining (ADEQ 2004).

Comment 4.4

This whole thing sounds like a wonderful opportunity to ruin the water in that area.

Comment 4.4: Division Response

The Draft Permit provides protections for groundwater outside of the Aquifer Exemption zone as summarized in the FSSOB.

Comment 4.5

I'm not sure what the permit actually allows- is it set up so they can mess with an aquifer that they are calling unsuitable for potable water? There is a family out there that has a well for domestic and ranching purposes...Wilcox 05-2589 is one of the wells, which is definitely inside the requested exemption boundary.

Comment 4.5: Division Response

No USDWs or domestic wells, such as the Wilcox well, are located within the proposed Aquifer Exemption Boundary (see Figure 2 above in this document). See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended and reposted for public notice and comment.

Comment 4.6

I reference Sections and sometimes page numbers going forward. The page numbers sometimes repeat in the 160's, and/or are out of sequence, like in Attachment L that references stuff from section 10, Mechanical Integrity. One of those pages says page 123, even though it is after page 183

Comment 4.6: Division Response

The Attachments to the Draft Permit (DWQ 2020a) are parts of the LVMC Technical Report (LVMC 2020) submitted with the UIC permit application (LVMC 2019) that have been used to support and define the Specific Permit Conditions in Part III of the Draft Permit (DWQ 2020a). As such, the page numbers in different attachments may overlap because they have not been changed from the original page numbers in the Technical Report (LVMC 2020).

Based on public comments such as this one, the documents with contradictory page numbers in the attachments will be reformatted in the updated Draft Permit to avoid confusion.

Comment 4.7

In attachments, Fig 3.2 I have a couple comments-

at the scale of the map, the location of the PW(Production Wells) are obscured by the proximity to the MW(Monitoring Wells)

Comment 4.7: Division Response

The Division agrees that the scale of the map is such that specific well locations are obscured by overlap in some cases. The exact coordinates of proposed monitoring wells are provided in Table 12.1 of Draft Permit Attachment F (DWQ 2020a). These coordinates can be used to construct a map at the scale desired to determine the locations of these wells. Construction and operation plans for ISR of copper and leach solution injection wells must be submitted to the Division for approval and must meet the specific Draft Permit conditions defined in Parts III.D, III.E, and III.F (DWQ 2020a).

Comment 4.8

and it's not clear how the PW's relate to Injection Wells-(Which in the Draft Permit, Page 9, are lumped together for purposes of the narrative).

Comment 4.8: Division Response

There are water production wells and ISR wells. Injection wells may be converted into ISR production wells depending on the local conditions and operating plans. Water production wells may be within or outside of ISR wellfields and may be used for injection or recovery if they meet the conditions of Part III.D and Attachment D of the Draft Permit (DWQ 2020a).

Comment 4.9

Also comment on Fig 3.2, in the inset of the Area Exemption Boundary are 3 areas with additional stippling which are not identified in the Legend, I believe they are the zones of mineralization they want to pump? In Fig 12.2 page 149 the stippled areas are called ISR Well Fields.

Comment 4.9: Division Response

Figure 3.2 in Attachment B of the Draft Permit (DWQ 2020a) shows three stippled areas that are not identified in the figure's legend. These stippled areas are target zones of mineralization that LVMC has identified as candidate ore bodies for ISR of copper. In Figure 12.2 on page 148 of the LVMC Technical Report (LVMC 2020) the stippled areas are ISR Well Fields. See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended and reposted for public comment.

Comment 4.10

In the Attachment supplement

'Corrective Action Plan' page 7 section 5.0 "company will use best professional practices - drill rig or tremie pipe" for Plugging improperly abandoned wells. My comment- are these choices totally at the discretion of the Company? Are there plans for a DEQ representative or a third party monitor to be in the field with them? I know some of those old well sites can be pretty obscure, and a tremie pipe might not get through whatever surface collapse has occurred, but a drill rig would punch right through into the old borehole. It seems the Company is interested in having any old holes sealed so maybe not necessary to have a third party monitor?

Comment 4.10: Division Response

Specific conditions set in the Draft Permit Part III.K and Attachment C require LVMC to use best professional practices to properly plug and abandon wells and ISR wells when no longer in use (DWQ 2020a). LVMC must notify the Director in writing no later than 45 days before planned conversion or abandonment of the well(s). In addition, per Draft Permit Specific Condition III.K.2 , a well condition report and individual plugging and abandonment plan must be submitted to the Division for approval in each instance and must meet conditions in the Draft Permit (DWQ 2020a). The Division will inspect plugging and abandonment operations and completions to ensure the wells are sealed correctly.

Comment 4.11

5.2 Mitigation and Avoidance- This section reads such that DEQ could require pretty extensive monitoring requirements- if I was the Company, I would want to have some kind of limitations on this. Where it says "may include monitor wells in addition to those provided for normal well field operations" is that at the discretion of DEQ? Can DEQ ask for more monitor wells?

Comment 4.11: Division Response

The Division can require additional monitoring wells on a case-by-case basis if the Director determines that additional wells are necessary to prevent the migration of fluids into USDW per the conditions in the Draft Permit (DWQ 2020a: III.M) and 40 CFR § 144.52(9).

Comment 4.12

Attachment D

6.3 two comments- what are the mitigation measures for the "process collection ponds" regarding bird and wildlife exclusion?

Comment 4.12: Division Response

UIC regulations do not call for mitigation measures for the "process collection ponds" regarding bird and wildlife exclusion as the surface facilities are not regulated by the UIC program. Surface facilities fall under the jurisdiction of other regulatory agencies and programs.

Comment 4.13

"The BC aquifer may not contain enough water supply to support ISR...does not recharge or have influent flow" This admission of the closed nature of the aquifer speaks volumes about how there may be issues with recovering the water to Baseline levels.

Comment 4.13: Division Response

UIC regulations only pertain to water quality, not quantity. Other regulatory programs or agencies are responsible for the quantity of groundwater withdrawals in Lisbon Valley. Following ISR of copper, groundwater will be restored in the BC Aquifer until water quality parameters have reached levels that are technically and economically feasible to achieve per Part III.G and Attachment H of the Draft Permit (DWQ 2020a).

Comment 4.14

7.2.1.2 N Aquifer PW-7 regarding Monitoring well MW97-13, located 1358' from PW-7, is the monitoring well water surface higher or lower than the water surface of PW-7? The pumping test information seems to indicate that either the two wells are not connected hydrologically, or there is enough water available that the amounts withdrawn from PW-7 don't affect the MW. However, the relative location of each wells water surface could affect that as well. The data from these transducer measurements are the linchpin of the process, and merits close scrutiny.

Comment 4.14: Division Response

The Technical Report (LVMC 2020) is not the permit or part of the permit (DWQ 2020a). The Division required LVMC to include the Technical Report as part of its application for the permit to provide information relevant to the Division's review of the application and to use when writing the Draft Permit. The Technical Report was provided to the public in response to a request from the public, but it is not part of this public notice package because the Technical Report itself is not part of the Draft Permit (DWQ 2020a). Moreover, LVMC revised and updated the Technical Report during the permit review process in response to requests from the Division for more information and for modifications to the proposed plan. The Draft Permit (DWQ 2020a) is the legal regulatory document that defines all permit conditions. The objective of the Division's review of LVMC's application and Technical Report is not to edit and finalize

them, but rather to use those documents to prepare the Draft Permit document, which is the subject of this public notice and request for public comment.

See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended and reposted for public notice and comment.

Comment 4.15

7.4.1 Background first paragraph end- "Well locations and GTO fault are shown on Fig 7.6 ?? Do they mean Fig 7.2?"

4th paragraph - do they mean Fig 7.3? I think the figure numbers in the exhibit don't match the numbers in the text narrative.

Comment 4.15: Division Response

The response to this comment is the same as the first paragraph of the response to Comment 4.14. The Technical Report (LVMC 2020) is not the permit or part of the permit (DWQ 2020a). The Division required LVMC to include the Technical Report as part of its application for the permit to provide information relevant to the Division's review of the application and to use when writing the Draft Permit. The Technical Report was provided to the public in response to a request from the public, but it is not part of this public notice package because the Technical Report itself is not part of the Draft Permit (DWQ 2020a). Moreover, LVMC revised and updated the Technical Report during the permit review process in response to requests from the Division for more information and for modifications to the proposed plan. The Draft Permit (DWQ 2020a) is the legal regulatory document that defines all permit conditions. The objective of the Division's review of LVMC's application and Technical Report is not to edit and finalize them, but rather to use those documents to prepare the Draft Permit document, which is the subject of this public notice and request for public comment.

Comment 4.16

7.4.2 Summary- no definition for "SGR material"

Comment 4.16: Division Response

The acronym SGR is defined in Section 3.9.1 on page 68 of the LMC Technical Report (LVMC 2020) as Shale Gouge Ratio.

Comment 4.17

7.6 Pump Testing Design

2) Detailed mapping of Ore bodies and lithology of overlying and underlying confining units I am surprised this hasn't been done, is it possible that this exploration would reveal a lack of commercial viability? This is an enormous amount of work to be done in itself before they start drilling monitor wells and production and injection wells! in Attachment J 15.0 Part M Financial Responsibility they seem to anticipate failure with remediation of 84 wells as part of their bonding costs. These estimated costs bear close scrutiny.

Apparently the lack of available ore is one reason the original mining operation went belly up, leaving an unpaid property tax bill of about \$2 Million to San Juan County.

Comment 4.17: Division Response

The response to this comment is the same as the first paragraph of the response to Comment 4.14 The Technical Report (LVMC 2020) is not the permit or part of the permit (DWQ 2020a). The Division required LVMC to include the Technical Report as part of its application for the permit to provide information relevant to the Division's review of the application and to use when writing the Draft Permit. The Technical Report was provided to the public in response to a request from the public, but it is not part of this public notice package because the Technical Report itself is not part of the Draft Permit (DWQ 2020a). Moreover, LVMC revised and updated the Technical Report during the permit review process in response to requests from the Division for more information and for modifications to the proposed plan. The Draft Permit (DWQ 2020a) is the legal regulatory document that defines all permit conditions. The objective of the Division's review of LVMC's application and Technical Report is not to edit and finalize them, but rather to use those documents to prepare the Draft Permit document, which is the subject of this public notice and request for public comment.

Given that the well density of completed ISR wellfields is much higher than for routine monitor well networks, it is common practice in ISR projects to test wells as drilling and well completion advances. However, the average hydraulic parameters of the BC Aquifer have been determined in existing wells and are sufficient for the purposes of the UIC permit application. With regard to financial assurance and back taxes owed by LVMC, please see the Division's response to Group Comment 2.

Comment 4.18

7.8 Pump Test Evaluation

*The Company says evaluation of the Pump Test Data will address several issues- basically proving their model is correct. **Does DEQ (UDWQ) have the resources and expertise to verify the Company's assertions?***

Comment 4.18: Division Response

The Division staff includes PhD hydrologists and geochemists who have extensive ISR and solution mining experience. In addition, they are Utah registered professional geologists and have the education, experience, and certifications necessary to evaluate this data.

Comment 4.19

7.9 Well Field Hydrologic Data Packages

I see something slightly confusing in this section-

It says data and results will be included in data packages according to UDWQ requirements. The slightly confusing part is where it refers to "If anomalous conditions are present..potential to impact human health... the well field ... data package will be submitted to UDWQ for review and approval"

Aren't they already submitting everything to UDWQ? Does this mean UDWQ only has review and approval rights IF there are anomalous conditions that might impact human health?

*Data Package contents, #7) Baseline water quality information including proposed upper control limits for monitor wells and **target restoration goals**.*

I emphasize target restoration goals-

What happens when these goals can't be met?

If they can't be met, the water quality is degraded, the recovery/remediation methods are not adequate, and presumably they are out of money because mining operations have ceased. What is the bonding procedure to insure adequate funds for this remediation process? It better be ironclad(not just copper clad, heh heh)

Comment 4.19: Division Response

The information and construction plan will be required prior to authorization to construct wells and wellfields as ISR operations commence and advance. If the data are not sufficient to meet existing Draft Permit requirements or otherwise indicate risk to USDWs, human health, or the environment, the plans will not be approved.

With regard to financial assurance, please see the Division's response to Group Comment 2. As new wells are installed, groundwater samples will be collected for analysis to add to the existing groundwater database. Target restoration water quality objectives will be based on technical and economic feasibility for best available water treatment systems. For some parameters, background or baseline water quality will be considered for target restoration objectives, if feasible. Water quality parameters may be set higher than background or baseline if the Division finds them protective of USDWs and meets target restoration objectives. The Draft Permit (DWQ 2020a) requires that these target restoration objectives will be met in all cases as they are set based on technical and economic attainability. The UIC statute and rules afford the Division the discretion to determine what restoration water quality metric is technically and economically feasible.

Comment 4.20

9.0 Part G Injection well Construction Plan

When they say "Limited Additives" are they going to specify which additives they are considering? Just Bentonite or?? Synthetic Polymers? Something compatible with potable water?

Comment 4.20: Division Response

The Technical Report (LVMC 2020) is not part of the public notice package. Additionally, LVMC must submit a Construction Plan prior to drilling and must disclose any materials used, including drilling fluids and additives, which must be approved by the Division in accordance with existing parameters in the Draft Permit (DWQ 2020a).

Comment 4.21

10.1 Well construction materials

3rd paragraph- The hole will be cased with 12 inch steel surface casing outside SDR 17. The next sentence says Fiberglass or steel casing may also be used- does that refer to the well casing or the Surface Casing?

I would like to know how deep the surface casing goes on one of these wells, page 119 Fig 10.1 looks like 18' for the cement annular seal.

Question regarding cementing the pipe-10.1 paragraph 5 "The annulus materials will be emplaced using a tremie pipe..."

then down in 10.12 Hydraulic Collapse Pressure Calculations, it seems they are talking about using water to displace cement and force it up the annulus (section 11.2). Which one are they using?

Comment 4.21: Division Response

The Technical Report (LVMC 2020) is not part of the public notice package. Additionally, LVMC must submit a Construction Plan prior to drilling and must disclose any materials used, including drilling fluids and additives, which must be approved by the Division in accordance with existing parameters in the Draft Permit (DWQ 2020a).

All well construction materials and methods must be described in the Construction Plan and submitted to the Division for approval before any construction commences. Per Part III.D.1 of the Draft Permit (DWQ 2020a), each well shall be constructed according to the requirements for Class III wells set forth in R317-7-10.1(B) and 40 CFR § 146.32, details of which are included in the Draft Permit conditions defined explicitly in Part III.D.2 through Part III.D.10.

Comment 4.22

11.1 Overview of Operations Paragraph 3

"In addition, these ponds may be equipped with evaporation systems to concentrate TDS(I'm assuming Total Dissolved Solids) for deep well disposal.

The deep well they reference later, do they have permission or a permit to use that well for this purpose? page 139 Figure 11.7

11.1 paragraph 5 This one has some hand waving going on in terms of where the water is coming from-they talk about BC for most of it, but then throw in the Navajo (N aquifer). Is that OK with UDWQ? Do they have those rights to use N aquifer for rinsing?

Comment 4.22: Division Response

In the LVMC's Technical Report (LVMC 2020), Section 11.1, Overview of Operations, Paragraph 3, LVMC describes the use of evaporation ponds to reduce the volume of leachate for treatment and disposal. As required per Draft Permit Part III.J.1: "Pursuant to 40 CFR Parts 146.10 and 144.12, the Permittee shall comply with the groundwater restoration in Attachment H in accordance with the schedule for aquifer restoration and groundwater monitoring to ensure adequate protection of USDWs. The Permittee shall also comply with the conditions at M below." (DWQ 2020a: III.J.1). The "conditions at M below" are in the Draft Permit, Part III.M (DWQ 2020a). The source of ISR makeup water and other water for operations mentioned in Section 11.1, paragraph 5 of the Technical Report (LVMC 2020) will come from the BC or N Aquifer or other sources at the discretion of LVMC and in accordance with their water sources. The Division does not administer allocation of water rights.

Comment 4.23

11.3 Injection and Production wells

"It is important to note that the spacing and configuration can and will change in response to geologic structure and hydraulic activity" Does the plan or permit specifically say that monitor wells need to be in place before they begin to change the purpose of a well? For example, lets say they are drilling a "monitor well" that turns out to have excellent ore body indications, so they want to make that a production well. How is that change accounted for in this permit? Do they have to drill monitor wells around that before they can continue with the process?

Comment 4.23: Division Response

New monitor wells will be constructed, if necessary, to track leach solution migration and protect USDWs per Draft Permit Specific Conditions Part III.G and Part III.M (DWQ 2020a). The Division also has the authority to reopen the Draft Permit and amend conditions as necessary if new information or changed circumstances require doing so to comply with the applicable statutes and regulations.

Comment 4.24

11.4 Wellfield Installation and Operation Sequence

"No well fields will interact with any domestic water wells" Is that true? I have to say, when someone starts talking about drilling hundreds of wells, and pumping materials made to dissolve copper minerals and recirculating that, and then being able to restore the water, I have to be skeptical. This sounds like a lot of stuff has to go right all the time.

Comment 4.24: Division Response

This information and construction plan will be required prior to authorization to construct wells and wellfields as ISR operations commence and advance. If the data are not sufficient to meet existing Draft Permit requirements or otherwise indicate risk to USDWs, human health, or the environment, the plans will not be approved.

Comment 4.25

11.4.1 Process ponds

They did a good job of chemical equations showing how copper comes out of the ground, I would like to see what they are talking about in the aquifer restoration process with similar analysis. Specifically, when

they say absence of makeup acid will quickly consume the remaining acid and solids will precipitate back into the aquifer, what does that look like? They reference gangue minerals(in 14.1 Wellfield Rinsing) neutralizing acid, can they provide a bit more chemistry on that?

Comment 4.25: Division Response

This information and construction plan will be required prior to authorization to construct wells and wellfields as ISR operations commence and advance. If the data are not sufficient to meet existing Draft Permit requirements or otherwise indicate risk to USDWs, human health, or the environment, the plans will not be approved.

Comment 4.26

11.7 Groundwater Restoration

Big question here- what comes first- the Permit, or the restoration plan? It seems like there is a bit of a leap of faith here- "Before and during the ongoing ISR operations, the Company will collect data in regard to baseline groundwater quality, natural acid neutralization as a function of sweep, and other pertinent information that will be used to prepare a comprehensive Groundwater Restoration Plan" Does this mean they get the permit and can start with all this activity before they really understand how the restoration process is going to happen? What are the UDWQ methods to halt this if the restoration plan isn't coming together?

Comment 4.26: Division Response

The Groundwater Restoration Plan must be provided to the Division for review and approval per Draft Permit condition Part III.J and Attachment H (DWQ 2020a). Per Draft Permit Condition III.L and Attachment J, Financial Assurance must be secured before commencing with ISR operations. Additionally, the Division has the authority to reopen the Draft Permit and amend conditions as necessary if new information demonstrates the need.

Comment 4.27

11.7.5 Land Application Process

Typically, there are other elements besides Cu that come out of an acid process, things like Arsenic. What are the accepted levels being proposed for Land Application? Is there some level above Baseline levels that's acceptable for Land Application?

Comment 4.27: Division Response

The information and construction plan will be required prior to authorization to construct wells and wellfields as ISR operations commence and advance. If the data are not sufficient to meet existing Draft Permit requirements or otherwise indicate risk to USDWs, human health, or the environment, the plans will not be approved.

Comment 4.28

11.9 Schedule

Can you tell me a bit about the "EPA aquifer exemption permit" that is referenced in the first paragraph please? Is that the same as Attachment M -Aquifer Exemption Request? Is there a federal exemption and State exemption requirement?

Comment 4.28: Division Response

See response to Group Comment 8 above indicating that the Division will amend and republish the Aquifer Exemption Request for clarity.

Comment 4.29

Attachment F Monitoring, Recording, and Reporting Plan

Fig 12.2 and subsequent figures 12.3 thru 12.6 - In the 12.3-6 Figures they reference Cross sections A-A' to D-D' I can't find any Figures with the surface location of those Cross Sections. Is that an omission in the application or am I just not seeing those? I looked closely at Fig 12.2 without success. I can see the wells referenced in the cross sections, LW N P1-4 from Cross section C-C' for example, but no C-C' on the Fig 12.2

Comment 4.29: Division Response

Figure 12.2 is not the correct map showing the cross section locations. Figures 12.3 through 12.6 reference cross sections A–A' to D–D' depicted in Figure 3.15 of the Technical Report (LVMC 2020: 53) and are shown on the plan view map Figure 3.15 in the Technical Report, which was not included in Draft Permit Attachment F. These cross sections are used in several figures of the Technical Report. Figure 3.15 will be copied from the LVMC Technical Report and added to Attachment F for clarity in the final version of the Permit.

The response to this comment is the same as the first paragraph of the response to Comment 4.14 The Technical Report (LVMC 2020) in which Figures 12.2–12.6 are found is not the permit or part of the permit (DWQ 2020a). The Division required LVMC to include the Technical Report as part of its application for

the permit to provide information relevant to the Division's review of the application and to use when writing the Draft Permit. The Technical Report was provided to the public in response to a request from the public, but it is not part of this public notice package because the Technical Report itself is not part of the Draft Permit (DWQ 2020a). Moreover, LVMC revised and updated the Technical Report during the permit review process in response to requests from the Division for more information and for modifications to the proposed plan. The Draft Permit (DWQ 2020a) is the legal regulatory document that defines all permit conditions. The objective of the Division's review of LVMC's application and Technical Report is not to edit and finalize them, but rather to use those documents to prepare the Draft Permit document, which is the subject of this public notice and request for public comment.

Comment 4.30

12.7 Quality Assurance

Shouldn't there be some level of a QA plan before the permit is issued? They recognize the need for a QA plan, but this is one of the ways the public can really have a handle on what's going on.

Comment 4.30: Division Response

In LVMC's Technical Report (LVMC 2020), Section 12.7 describes the submission of a Quality Assurance Plan, which must meet the specification of the Division's 1987 UIC Quality Assurance Plan per Part III.G.2 of the Draft Permit (DWQ 2020a). The specifics in the Quality Assurance Plan, such as well completion and testing reports, can only be developed and approved after the Draft Permit is issued because data necessary for the Quality Assurance Plan cannot be collected until LVMC starts some of the permitted activities.

Comment 4.31

13.2.1 Integrity Testing of Casing

they say they will run a Cement Bond Log, but don't say what constitutes a failure of MIT. Who determines when the CBL shows too poor a bond and the well needs to be "repaired or P&A'd". Does DWQ have the oversight for that?The pressure test of 10% loss in 10 minutes seems a bit lax, unless that is industry standard? I have little faith in a Tremie pipe down the annulus for getting a good cement job over a 500-900' casing run.(Unless i misunderstand their process, which is quite possible)

Comment 4.31: Division Response

Mechanical integrity testing described in Sections 10 and 13 of the LVMC Technical Report (LVMC 2020) must meet the requirements of the Draft Permit Specific Conditions Part III.I and Attachment L (DWQ 2020a) as specified in R317-7-10.3(B) and 40 CFR § 146.8.

Specific conditions set in the Draft Permit Parts III.G, III.I, and III.K and Attachments C, I, and L require LVMC to use best professional practices to test mechanical integrity and properly plug and abandon wells and ISR wells when no longer in use or if the well does not meet mechanical integrity requirements (DWQ 2020a). LVMC must notify the Director in writing no later than 45 days before planned conversion or abandonment of the well(s). In addition, per Draft Permit Specific Condition III.K.2, a well condition report and individual plugging and abandonment plan must be submitted to the Division for approval in each instance and must meet conditions in the Draft Permit (DWQ 2020a). The Division will inspect plugging and abandonment operations and completions to ensure the wells are sealed correctly when the well is no longer in use or loses mechanical integrity. Division staff are present to observe mechanical integrity testing and plugging and abandonment operations and ensure that they are performed as specified in the Draft Permit.

See the Division's response to Group Comment 2 above indicating that the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

Comment 4.32

14.0 Part L Wellfield closure Plan

Review of adequate financial bond should be a fairly regular activity, not just after three years. The number of remediation sites paid for by taxpayers due to insufficient bonding or oversight is some number that is really high.

Comment 4.32: Division Response

UIC program requirements for Financial Assurance are specified in R317-7-9.1 and 40 CFR § 144.52. Financial assurance is revised every five years per Part II.D.2 of the Draft Permit (DWQ 2020a). See the Division's response to Group Comment 2 above indicating that the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

Comment 4.33

Page 160 and 161 seem to be repeated

Comment 4.33: Division Response

Page numbers will be reformatted.

Comment 4.34

14.1.1 Mobilization \$75,000 for preparation and planning? \$20,000 to mob and demob from site? really? I want to hire that company for all my drilling projects.

Comment 4.34: Division Response

See the Division's response to Group Comment 2 above indicating that the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

Comment 4.35

14.1.5 Rinse Verification Sampling

Sample size of 10% for QA verification- if that's just QA that;s probably ok, because all wells are tested, right? This 10% is just QA verifying, right?

Comment 4.35: Division Response

This level of QA verification meets the QA/QC requirements of the Utah UIC Quality Assurance Plan per Part III.G.2 of the Draft Permit (DWQ 2020a).

Comment 4.36

14.1 Well Plugging and Abandonment plan page 164

Please get some estimates from other drilling companies for P&A on 84 wells. \$708,000 sounds like a pretty aggressive bid.

Comment 4.36: Division Response

See the Division's response to Group Comment 2 above indicating that the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

Comment 4.37

Attachment L Mechanical Integrity Testing 10.5

A pressure drop of 10%, over 10 minutes? is that standard for this type of well? That seems kind of loose

Comment 4.37: Division Response

See response to Comment 4.31 regarding Mechanical Integrity Testing of Casing above.

Specific conditions set in the Draft Permit Part III.I and Attachments L require LVMC to use best professional practices to test the mechanical integrity of ISR wells when constructed and every five years thereafter and when no longer in use or if the well does not meet mechanical integrity requirements (DWQ 2020a). Mechanical integrity testing is required by state and federal regulations in R317-7-10.3(B) and 40 CFR § 146.8.

Comment 4.38

16.2 Aquifer Serving as a Source of Drinking Water

Comment 4.38: Division Response

See the Division response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 4.39

"there are no domestic water wells in the Project Area" According to the local ranching family, Wilcox, there ARE domestic water wells in the area.

Comment 4.39: Division Response

There are no domestic wells within the Project Area or Aquifer Exemption volume defined in the Draft Permit (DWQ 2020a) and FSSOB (DWQ 2020b). This is also shown in Figure 2 in the Aquifer Exemption Request (DWQ 2020c).

Comment 4.40

Perhaps some tests of the Wilcox wells could determine if the quality is better than indicated by the Company on page 169 for that aquifer.

Comment 4.40: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished. Additionally, the Wilcox well is outside the portion of the BC Aquifer proposed for exemption.

Comment 4.41

I see the Company is claiming the aquifer exemption based on the commercially producible amounts of minerals. The Wilcox wells are on the edge of the project. Perhaps some accomodation for those wells?

Comment 4.41: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 4.42

They seem pretty dismissive of the BC aquifer in regards to domestic use. There are plenty of people using it for crops and irrigation

Comment 4.42: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 4.43

16.4 Requested Aquifer Exemption Boundary

they state the nearest PUBLIC water supply, but I am sure there are other private domestic water supplies closer than that. Do private wells have no significance? That doesn't seem right.

Comment 4.43: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

COMMENT 5. SCOTT STEVENSON, PRIVATE CITIZEN, NOVEMBER 8, 2020

My name is Scott Stevenson and my wife and I own (along with 2 partners) and operate 3 Step Hideaway LLC located in Lower Lisbon Valley. San Juan County, Utah. www.3stephideaway.com

Our well is located incorrectly on Lisbon Valley Mining CO. (Figure 3.2) Proposed Aquifer Exemption Boundary map. Stevenson 05-2970.....Well name on map. See attached map.

I want to go on record as opposed to this Aquifer Exemption because our Domestic drinking water well is in the area. I and 3 Step Hideaway LLC are strongly opposed to any In Situ Recovery Mining in Lisbon Valley.

Please feel free to contact me and verify this info with your own equipment.

(Follow-up e-mail from Scott Stevenson, November 8, 2020

Here is a better pic and location map of our well, on our property.

Please adjust our well head location on your map titled: "Proposed Aquifer Exemption Boundary" So that the public is not misled anymore.

I still strongly oppose In Situ Recovery Mining in Lisbon Valley. And the HUGE possibility of our well being polluted and or depleted. I would again request a public hearing on this matter ASAP.

Comment 5: Division Response

According to the Utah Division of Water Rights well coordinates (in the Universal Transverse Mercator system, not latitude and longitude), the Stevenson 05-2970 well is between 100 and 200 feet south and outside of the proposed Aquifer Exemption boundary in the Draft Permit (DWQ 2020a: Attachment B, Figure 3.2). Map projections like the one shown in Figure 3.2 can mathematically distort apparent distances because of the projection system and resolution used by the person who created the map. This is not intentional; it is a function of geographic projection methods. The Stevenson 05-2970 well is located in the N Aquifer and is upgradient of the portion of the BC Aquifer Exemption that is being requested by Lisbon Valley. Therefore, even if it were within the area boundary on the map as shown on the surface, it would not qualify as a source of drinking water within that Aquifer Exemption volume and will not be affected by the Aquifer Exemption Request because the proposed Aquifer Exemption is in a different

aquifer. See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

COMMENT 6. JANET ROSS, BOARD CHAIR, EASTLAND SPECIAL SERVICES DISTRICT, NOVEMBER 10 AND 15, 2020

The Lisbon Valley Copper Mine has re-opened and is again applying for a permit to utilize In Situ Mining of copper in Lisbon Valley. They state that approximately 2,000 chemical acid injections may eventually occur into the aquifer. The Utah Division of Water Quality is seeking public comment, and as such ours is below.

The Eastland Special Services District (ESSD) is concerned that these injections will occur within about 20-30 miles north of our community well. The ESSD well hole has a depth of 4,000 feet (with water at 1,200-1,700 feet), and provides culinary drinking water to about 75-100 people through a public water system (both through the water system and people outside the community who use our public water stand). We request that an official study be conducted concerning the impact to the aquifer that supplies ours (and others water). If our water is contaminated by these chemical injections that may travel into our community well through the underground aquifer, we will no longer be able to use this water.

Currently, the application is not accurate regarding drinking water and in situ mining as the BLM EIS was done in 1997 and does not address in situ mining and chemical injections into the aquifer. An amendment to the EIS would be appropriate. A public hearing and technical study need to be done prior to when, and if, a permit is issued.

The Eastland Special Services District Board appreciates attention to this public comment. Our water source is crucial to our community. We need our culinary water to be protected. A great deal of information about our well can be found from Kim Coburn, Staff Engineer - Minerals Utah Division of Oil, Gas and Mining Office: 801-538-5310.

Comment 6: Division Response

The ESSD well is outside the proposed Draft Permit Area of Review (DWQ 2020a: Attachment B, Figure 1.2) and the Aquifer Exemption boundary (DWQ 2020c: Figure 3.2). The geologic and structural contacts isolate the occurrence of the BC Aquifer within Lisbon Valley, and the groundwater system in Lisbon Valley is not connected to the regional groundwater system that exists at higher elevations (Avery 1986). The deeper N. Aquifer system beneath Lisbon Valley is also isolated from the regional groundwater system, and the groundwater gradient follows the southeast-trending Lisbon Valley and the McIntyre Canyon toward the Dolores River drainage system. See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

**COMMENT 7: ROBERT KRANTZ, PHD, ADJUNCT PROFESSOR, UNIVERSITY OF ARIZONA,
NOVEMBER 23, 2020**

I have been engaged in academic study of the geology of the greater Lisbon Valley, including the area of the proposed ISR project, since 2017. This study has focused on specific geologic relationships that relate to the distribution and evolution of components that control ancient and modern subsurface fluids. These fluids include those that generated the copper deposits in the mine area as well as modern aquifers. The most important component in my analysis is the Lisbon Valley fault system.

For the past 3 years I have mapped faults in 3 dimensions, analyzed the distribution of offsets and impact on stratigraphic juxtapositions, and characterized the content of the fault zones and their altered permeability. In 2018 I supervised a number of student projects, including one that focused on fault gouge properties from samples collected in and around the current mine area.

Our collective results reveal a system of uniquely isolated aquifers in lower Lisbon Valley. Major valley-bounding faults locally drop permeable aquifer units against impermeable strata. In addition, all the fault zones we have sampled include thick gouge with high clay content and very low permeability. These observed gouge samples match predictions from well-established methods for predicting fault zone content and properties, methods that can be confidently used to characterize unexposed segments of the faults. In essence, the faults on both sides of lower Lisbon Valley provide significant barriers to lateral aquifer flow. I believe these faults, and other geologic relationships will provide effective containment for the ISR process.

For full disclosure, following the initial work done with my student in 2018, I completed additional fault zone analysis under contract with the LMCC, and reported on this work in reviews for the UDEQ and EPA. Please let me know if you have any questions or would like more information about our study results.

Comment 7: Division Response

The Division agrees with the conclusions of the commenter's study, which is cited in LVMC's permit application (LVMC 2019). This finding supports the conclusion that the occurrence of groundwater in the BC and N Aquifers in Lisbon Valley are hydrologically separate from the regional aquifer system by low permeability fault gouge on the northern and southern extents of Lisbon Valley. These boundaries are used in part to define the proposed BC Aquifer Exemption volume in the Draft Permit (DWQ 2020a).

COMMENT 8: COMMENT WITHDRAWN

Comment withdrawn.

Comment 8: Division Response

No response required.

**COMMENT 9: INNA THORN, DIRECTOR OF OPERATIONS, BACKCOUNTRY DISCOVERY ROUTES,
NOVEMBER 24, 2020**

Please accept these comments as part of the public record for the Public Hearing and decision action regarding the Draft Permit for Underground Injection Control (UIC) Class III Area, Draft Permit No. UTU-37-AP-5D5F693, In Situ Copper Recovery from the Lisbon Valley Mining Company, LLC, San Juan County, Utah.

These comments are submitted on behalf of Backcountry Discovery Routes (BDR). The BDR is a non-profit organization that creates off-highway routes for dual-sport and adventure motorcycle travel. Our work includes rider education, safety campaigns and promoting responsible travel for motorcyclists traveling in the backcountry.

BDR is providing these comments out of our concern for the potential impacts to the unique recreational opportunities for motorcyclists in the Lisbon Valley and the possible adverse impacts to the domestic water supply of the 3 Step Hideaway and other local ranchers and residents.

The BDR and many of our affiliates cherish the opportunities to regularly visit and stay at the 3 Step Hideaway and enjoy their rustic 80-acre retreat. We especially embrace the unique qualities that the 3 Step Hideaway provides for motorcycle riders that are embarking upon long-distance rides that cross the Lisbon Valley and for those of us that choose to stay at this very special facility. The 3 Step Hideaway provides an oasis for food, fuel and lodging for travelers of all modes experiencing the adventure of the Utah Backcountry Discovery Route, the Trans America Trail, and other regional adventure routes.

We realize that this decision will be based upon the Division's diligent consideration of the technical and engineering information relating to ground water, aquifers and scientific mitigation measures and best management practices along with local economic forecasts and expectations. However, as a non-technical recreational advocacy group we still feel compelled to express our concerns for the very possibility of the potential for some very adverse impacts to the aquifer from which the 3 Step Hideaway extracts its domestic water supply from. We implore the Division to thoroughly and carefully consider the myriad and complexity of the interconnected aquifers within the Lisbon Valley and the consequences if the engineering studies, conclusions and mitigations should fail or perform at a level less than expected from the injection of raffinate into the ore zone of the Burro Canyon aquifer. The potential for contamination of the vulnerable and limited domestic water supply of local residents and businesses could be devastating.

We would like to offer that perhaps this is just not the “right or best” location and time to try a new, experimental form of in-situ mining in Utah, utilizing the injection of sulfuric acid into the ground to dissolve the much desired copper deposits. The BDR understands and supports our world’s need and desire for copper and the usefulness that that this metal provides to our daily lives and especially to the operation of our motorcycles. We are in no way opposed to mining in general and the need that we all have for extractive processes of our natural resources. We just question whether this particular mine, operated by the Lisbon Valley Mining Company in the Lisbon Valley and the potential for adverse affects upon the domestic water supplies of the 3 Step Hideaway and other local ranchers is the right place and right time to conduct this “experiment”.

In summary, Backcountry Discovery Routes emphatically asks that the Utah Environmental Quality Division of Water Quality gives this permit it’s upmost diligent consideration and we ask that your decision(s) adequately protects the vulnerable and essential domestic wells of the 3 Step Hideaway and other local residents.

Comment 9: Division Response

The primary concerns of BDR’s comments are addressed in the Division’s responses to Group Comments 1 and 9 in Section II of this document. In situ copper recovery projects, like the Florence and Gunnison Copper projects in Arizona, have been permitted previously under UIC regulations by the EPA. As explained in the Draft Permit (DWQ 2020a), natural geologic structures and institutional controls will be used to monitor and protect groundwater resources outside the proposed Aquifer Exemption boundary. The hydrology and geology of the Lisbon Valley copper deposits are well suited for ISR because there are natural hydraulic barriers on three sides, including those that protect the groundwater resources used by the 3-Step Hideaway. Permit conditions and monitoring are designed to protect the BC and N Aquifers outside of the proposed Aquifer Exemption Boundary, and a higher density of monitoring wells will be constructed on the eastern border of the Aquifer Exemption and project boundaries. Concurrent groundwater restoration is required by the Draft Permit (DWQ 2020a) after copper recovery is complete to mitigate long-term migration of residual leach solutions. See also the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

See the Division’s response to Group Comment 2 above indicating that the Division is requiring that LVMC provide an updated financial assurance estimate that will be republished for public notice and comment before the Draft Permit is final.

**COMMENT 10: JERRY ABBOUD, PRESIDENT, COLORADO OFF-HIGHWAY VEHICLE COALITION,
NOVEMBER 25, 2020**

Please accept these comments as part of the public record for the Public Hearing and decision action regarding the Draft Permit for Underground Injection Control (UIC) Class III Area, Draft Permit No. UTU-37-AP-5D5F693, In Situ Copper Recovery from the Lisbon Valley Mining Company, LLC, San Juan County, Utah. These comments are submitted on behalf of the Colorado Off-highway Vehicle Coalition (COHVCO). COHVCO is a recreational advocacy organization created to be a viable partner with public lands managers to preserve the sport of motorized trail riding and multiple-use recreation.

COHVCO is a statewide organization operating for 35 years, composed of members whose interests are in motorized recreation in Colorado and surrounding states including the profoundly beautiful state of Utah.

We have been an advocacy organization with a mission that includes protecting natural resources, as such, we consider ourselves a conservation organization. Without a healthy environment we all lose access. This brings us to our concerns about the proposed Drafty Permit referenced above.

Colorado Off-highway Vehicle Coalition (COHVCO). COHVCO is a recreational advocacy organization created to be a viable partner with public lands managers to preserve the sport of motorized trail riding and multiple-use recreation.

COHVCO does not share the often illogical, more radical environmental ideas, goals, ideologies and policies of many of the conservation and environmental organizations...we are not anti-commodities. COHVCO is providing these comments out of our concern for the potential impacts to the unique recreational opportunities for motorized recreationists in the Lisbon Valley and the possible adverse impacts to the domestic water supply of the 3 Step Hideaway and other local ranchers and residents.

COHVCO and our members cherish the opportunities to regularly visit and stay at the 3 Step Hideaway and enjoy their rustic 80-acre retreat. We especially embrace the unique qualities that the 3 Step Hideaway provides for motorcycle riders that are embarking upon long-distance rides that cross the Lisbon Valley and for those of us that choose to stay at this very special facility. The 3 Step Hideaway provides an oasis for food, fuel and lodging for travelers of all modes experiencing the adventure of the Trans America Trail and other regional adventure routes.

We realize that this decision will be based upon the Division's diligent consideration of the technical and engineering information relating to ground water, aquifers and scientific mitigation measures and best management practices along with local economic forecasts and expectations. However, as a recreational advocacy, not as engineers or hydrologists, we still feel compelled to express our concerns for the very

possibility of the potential for some very adverse impacts to the aquifer from which the 3 Step Hideaway extracts its domestic 2 water supply from.

We implore the Division to thoroughly and carefully consider the myriad and complexity of the interconnected aquifers within the Lisbon Valley and the consequences if the engineering studies, conclusions and mitigations should fail or perform at a level less than expected from the injection of raffinate into the ore zone of the Burro Canyon aquifer. The potential for contamination of the vulnerable and limited domestic water supply of local residents and businesses could be devastating. We would like to offer that perhaps this is just not the “right or best” location and time to try a new, experimental form of in-situ mining in Utah, utilizing the injection of sulfuric acid into the ground to dissolve the much desired copper deposits.

COHVCO understands and supports our world’s need and desire for copper and the usefulness that that this metal provides to our daily lives and especially to the operation of motorized recreational vehicles . We are in no way opposed to mining in general and the need that we all have for extractive processes of our natural resources. We just question whether this particular mine, operated by the Lisbon Valley Mining Company in the Lisbon Valley and the potential for adverse effects upon the domestic water supplies of the 3 Step Hideaway and other local ranchers is the right place and right time to conduct this “experiment”.

In summary COHVCO emphatically asks that the Utah Environmental Quality Division of Water Quality gives this permit its upmost diligent consideration and we ask that your decision(s) adequately protects the vulnerable and essential domestic wells of the 3 Step Hideaway and other local residents.

Comment 10: Division Response

The concerns of COHVCO’s comments are addressed in the Division’s responses to Group Comments 1, 8, and 9 in Section II of this Response Document.

In situ copper recovery projects, like the Florence and Gunnison Copper projects in Arizona, have been permitted previously under UIC regulations by the EPA. As explained in the Draft Permit (DWQ 2020a), natural geologic structures and institutional controls will be used to monitor and protect groundwater resources outside the proposed Aquifer Exemption boundary. The hydrology and geology of the Lisbon Valley copper deposits are well suited for ISR because there are natural hydraulic barriers on three sides, including those that protect the groundwater resources used by the 3-Step Hideaway. Permit conditions and monitoring are designed to protect the BC and N Aquifers outside of the proposed Aquifer Exemption Boundary, and a higher density of monitoring wells will be constructed on the eastern border of the Aquifer Exemption and project boundaries. Concurrent groundwater restoration is required by the Draft Permit (DWQ 2020a) after copper recovery is complete to mitigate long-term migration of residual leach

solutions. See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

COMMENT 11: JULIE STEVENSON, LOWER LISBON VALLEY RESIDENT, JANUARY 6, 2021

In your consideration of the Class III Area Permit, Underground Injection Control (UIC) Program, UIC Permit Number UTU-37-AP-5D5F693, Lisbon Valley Mine (UT Mine ID 0370088), San Juan County, Utah, I would like to submit the following statement:

My name is Julie Stevenson and I am a full-time resident and co-owner/operator of 3 Step Hideaway in lower Lisbon Valley, San Juan County, Utah.

Thank you for holding the Virtual Hearing regarding this matter on November 24, 2020, and for extending the Public Comment Period until January 11, 2021.

My husband and I came here 7 years ago to live a peaceful and quiet life. We have worked very hard and built a successful business from scratch, in addition, we are upstanding members in our community.

The second sentence in the Declaration of Independence declares our basic human-rights as United States Citizens. It says, QUOTE: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty, and the pursuit of Happiness." END QUOTE

If Lisbon Valley Mining Company or ANY company is allowed to experiment in our county with these highly toxic chemicals in our sandstone soil, which by the way, neither process has EVER been tried before, they WILL contaminate our water and destroy the land along with EVERYTHING that lives here including plants, animals, and people. In Situ mining will strip the residents and our tourists of their basic human-rights of life, liberty, and the pursuit of happiness, because it will COMPLETELY destroy this pristine land and its limited water supply.

The entire region of San Juan County is presently in an EXTREME DROUGHT situation and has been for some time. We must be VERY mindful with the limited resources nature provides. Our land and water are precious resources, and without these, our very lives and livelihoods would cease.

In reviewing LVMC's UIC Class III Area Permit Draft, I have noticed SEVERAL falsifications, however I will only bring one to your attention in this communication:

In the Lisbon Valley Mining Company LLC, Lower Lisbon Valley ISR Technical Report, page 168, Section 16.0 Part N - Aquifer Exemption, it states, QUOTE: "This section summarizes data in support of an aquifer exemption request for the BC Aquifer in the Project Area. It is formatted to state 40 CFR requirements,

identify how the Project meets these requirements, identify the horizontal and vertical AEB, and summarize information provided in previous sections for clarity.

16.1 Introduction

40 CFR §146.4 allows EPA to exempt an aquifer or portion of an aquifer for the purpose of injection provided:

(a) It does not currently serve as a source of drinking water". END QUOTE

Page 169 of the same report states further, QUOTE:

"16.2 Aquifer Serving as a Source of Drinking Water

Question: Does the aquifer serve as a source of drinking water?

Answer: No.

There are no domestic wells in the Project Area." END QUOTE

Our ENTIRE property is included in LVMC's Project Area which encompasses our domestic water well.

Since our domestic water wells are in the Burro Canyon Aquifer and clearly in LVMC's Project Area, I am hopeful that The Division of Water Quality (DWQ) upholds their commitment to the citizens of the State of Utah as stated on the deq.utah.gov website to QUOTE : "protect[s] surface and groundwater through programs designed to protect, maintain, and enhance the quality of Utah's waters." END QUOTE.

Thank you for your diligence in thoroughly reviewing this Permit Application and all Public Comments regarding this very serious matter, that will affect not only the BC Aquifer and lower Lisbon Valley residents and visitors, but has the potential to contaminate the entire Dolores River watershed, as stated in LVMC's BLM Permit Application. I respectfully request that you completely reject and/or deny this Class III Area Permit, Underground Injection Control (UIC) Program, UIC Permit Number UTU-37-AP-5D5F693, Lisbon Valley Mine (UT Mine ID 0370088), San Juan County, Utah. Thank you.

Comment 11: Division Response

Although the project area includes the Stevenson property in order to define areas of potential mineralization, this boundary does not in any way convey property rights or exclusive privilege per Draft Permit Part II.D.7 (DWQ 2020a). Mineral rights are separate from land ownership (surface rights). However, any injection activity within the boundary of the Draft Permit area is subject to the permit's conditions and obligations.

See the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished for public notice and comment before the Draft Permit is final. Restoration of the quality and quantity of groundwater is required by the Draft Permit (DWQ 2020a) after copper recovery is complete to mitigate long-term migration of residual leach solutions.

The Draft Permit Part II.D.12.h (DWQ 2020a) requires that if LVMC becomes aware of a failure to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, LVMC shall submit such facts or information within ten days after becoming aware of the failure to submit relevant facts. If LVMC violates this requirement, the Division will take enforcement action. Periodic LVMC facility inspections and monitoring by trained and certified Division staff will ensure that violations are detected and corrected under the authority of 40 C.F.R. § 145.12(c).

While the Draft Permit and surety requirements only consider closure of wells, wellfields, and groundwater restoration, other permits and spill prevention control and countermeasure plans will be required by other regulatory agencies for the LVMC in situ copper recovery project to commence.

COMMENT 12: RL WILCOX, PRIVATE CITIZEN, NOVEMBER 30, 2020

My name is RL Wilcox. I am Mike and Joan's youngest son. When I left home in 1994, My parents went to work on fulfilling a lifelong dream of making a home in Lower Lisbon Valley. My grandfather purchased land and grazing permits in the 1950's after his return from world war II. My parents wanted to improve on that part of the ranch. They have improved the area by developing water, installing a small solar power supply, seeding projects, creating new ponds and improving old ones, cross fencing for improved grazing, and building facilities to house and work livestock in a safe and efficient manner. Their biggest obstacle was always a reliable source of water. They drilled several wells that produced very little and hauled water for years. Finally, in 2013 they hit a good well. The water was good and there was plenty of it. They filed on the water and developed it. We ran a pipeline to the house and installed drinkers along the way to provide water for our livestock and the wildlife in the area. This water is our lifeblood. The water that sustains our lives in Lower Lisbon Valley comes from the Burro Canyon aquifer. The same aquifer that Lisbon Valley Copper mine wants to inject acid into.

The improvements that my family has made in Lower Lisbon Valley are not only ways to improve our business of producing American beef, but it is also their home. It is a place that my children spend time at grandpa and grandma's. They learn how to be good stewards of the land or simply set on the porch and look at the stars. They learn how to ride and rope. They learn how to care for animals and be respectful of all of God's creations. They learn how to work hard and play harder. We gather there for Holidays, birthdays, and brandings. My parents have made many sacrifices to improve our family business, care for

the environment, be good neighbors, honor their ancestors, provide for future generations, and fulfill a lifelong dream.

LVMC was not the first copper mine that had come to the valley. As a young boy my parents and grand parents had taught me to always be on the lookout for holes in the ground that could swallow up a horse. Our old branding corral was what is now a huge waste dump for the mine. The previous mine had left a huge mess with old open pits and large spots of ground that grass could not grow. My Grandpa Max always used it as a teaching opportunity for my brother and me. He would always shake his head in disgust and say "Boys, don't ever leave a mess like this when you are done. Always leave things better than they were before you found it. That way your grandkids will be able to be here."

Around 1996 LVMC moved in just down the road. We have learned how to be neighbors to a Mine that does not share the same values that we do. Lisbon Valley Copper Mine wants to take everything they can, as cheap as they can, and then leave a mess for our future generations to deal with. We have accepted that fact and have done our best to live next to them. They have for the most part stayed on their side of the fence, and we stay on our side. But now they want to cross the fence and make a mess of our front yard and inject acid into our drinking water.

If the division of Water Quality issues this aquifer exemption to Lisbon Valley Copper Mine, it will be the beginning of the end for Wilcox Ranches in Lower Lisbon Valley. If they don't poison our water, they will deplete our water. They will put settling ponds full of acid on our private ground so when the wind blows it will affect the air that we breath. And grass cannot grow on or near a pond of acid.

There will be pipelines of acid ran on the surface of the ground. When these pipes fail, either man-made failures or natural failures, acid will spill out on the ground and grass will not grow there ever again. And when the copper has been extracted or more likely the copper Mine goes broke again due to poor management, low copper prices, lack of investor interest, or a global pandemic, they will be gone, and we will be left with a mess. But this time, not just big holes in the ground or large spots on the ground that grass cannot grow, but the aquifer that we depend on will be ruined.

The Division of water quality has drafted a permit based on information that they have received from Lisbon Valley Copper Mine. I hope the Division will now consider the other side of the story. This valley has changed since 1996. The entire western United States has changed when it comes to water. There is a battle waging in the west for drinking water. In the west, it is our most precious resource. How can you say that the Burro Canyon aquifer will never be used as a source for domestic drinking? It already is a source for domestic drinking, but The Lisbon valley Copper mine has declared that it does not serve as a source of drinking water. That simply is not true.

The Lisbon Valley copper mine does not even list us as surface landowners on the permit application. That is simply not true. The Lisbon Valley mining company is required to show that they are financially responsible. That is simply not true. What other false information have they supplied to the Division of Water Quality? They have done nothing to improve the environment in Lower Lisbon Valley and now they want the Division of water quality to give them permission to further deplete our most valuable resource.

The Lisbon Valley Copper mine has done nothing since 1996 to earn our trust. The Division is relying on the copper mine to monitor the water quality in the Burro Canyon aquifer. How can we be sure that they will do it with anyone's best interest but their own? Lisbon Valley Copper Mine's only interest is to get the copper out of the Burro Canyon aquifer. Not to protect the aquifer. How can they be trusted to monitor the quality and quantity of the aquifer?

Isn't it the divisions responsibility to protect water quality in the State of Utah? What assurances do we have? If things go wrong who will make us whole? Who will be financially responsible for our water rights being infringed upon? Who will be responsible for our loss of grass on our private ground and our grazing allotment? The draft permit requires restoration of the aquifer upon completion, what about when something goes wrong during mining?

Does the Division of water quality have the burden of doing the research or do they rely only on the copper mine to feed them information? Upper Lisbon Valley and the La Sal area are spotted with supposedly reclaimed mines. They are a detriment to everyone in San Juan County. Please do not allow Lisbon Valley Copper mine to jump the fence and destroy one of the last pristine places in our state.

If they stay where they are currently permitted to mine copper and continue to operate the way they have, we will just accept the fact that they do not share the same values as we do. We ask the Division of water quality to reject the exemption, keep the current mining boundary, and prevent them from injecting acid into the same aquifer that we drink from. At some point, someone has to take a stand and say enough is enough.

Comment 12 Division Response

No USDWs or domestic wells, such as the Wilcox well, are located within the proposed Draft Permit area (DWQ 2020a: Attachment B, Figure 3.2) or Aquifer Exemption Boundary (DWQ 2020b), which is a portion of the BC Aquifer in western and central Lisbon Valley.

See the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. The controlling UIC regulations and statute on which the Division's Draft Permit decision is based do not consider historic land use or public sentiment outside those parameters in the governing laws. Additionally, sufficient evidence has been submitted by LVMC to demonstrate that mineral resources are

expected to be present in sufficient quantity to allow for an Aquifer Exemption for a select, mineralized portion of the BC Aquifer under 40 CFR § 146.4 and 40 CFR § 144.7. Furthermore, the portion of the BC Aquifer that qualifies for exemption is within a small and locally confined volume of the larger BC Aquifer system that is isolated from the regional BC Aquifer and N Aquifer (Avery 1986). A large portion of the BC Aquifer outside of the Draft Permit area and Aquifer exemption in eastern Lisbon Valley is still available as a local water source for livestock watering and other uses but cannot support a USDW under the definition provided by the SDWA. The Draft Permit minimizes any risk to USDW during in situ copper recovery in accordance with the SDWA and associated UIC rules and regulations.

Draft Permit Part III, Section M (DWQ 2020a) and 40 CFR § 144.52 give the Director discretion to impose additional conditions on a case-by-case basis as necessary to prevent the migration of fluids into USDW, such as in the event of environmental incidents or alert conditions in the future that can be addressed under UIC rules and regulations. The Division does not have the authority to regulate beyond the governing UIC statute and regulations. However, surface water discharge, surface land disturbances, and other environmental concerns are the responsibility of other jurisdictions and permits.

COMMENT 13: RL WILCOX, PRIVATE CITIZEN, DECEMBER 1, 2020

Comment 13.1

My name is RL Wilcox. My parents live in Lower Lisbon Valley. Our family owns property and water rights near the Lisbon Valley Copper Mine. We have a working cattle ranch there that has been there for generations. We drink water from the Burro Canyon aquifer. I am requesting an extension of the public comment period for another 60 days. The public needs more time to effectively comment as there were technical difficulties with your presentation at the public hearing and there are data gaps in the attachments that have been provided to the public. The public has questions that need your response before we can comment further. Lisbon Valley Copper Mine has had years to prepare their application, the public deserves more than 30 days on an issue of such great importance. As I attended the public hearing, I was disappointed that there was not a question and answer session as part of the hearing. Here are a few of my questions.

1. Does the Lisbon Valley Mining Company need a permit from The Division of Oil, Gas, and Mining to operate outside of their current mining boundary for the In-Situ Recovery process?

Comment 13.1: Division Response

Utah DOGM will require a separate mining permit, but this permit is not required for the Division to issue the UIC Draft Permit.

Comment 13.2

2. Does the Lisbon Valley Mining Company need a permit from the BLM or SITLA to use the In-Situ Recovery process on their land? With Federal lands being involved, why has this not been through an environmental review based upon the National Environmental Policy Act? Are there indirect impacts to Federal, State, and private lands during and after the ISR process?

Comment 13.2: Division Response

Yes, federal permits will be required but are not required prior to the Division's issuance of the UIC Draft Permit.

Comment 13.3

3. What are the requirements for Lisbon Valley Mining Company to show that they are financially responsible? Is it only a surety bond? Does the bond take into account past poor performance? How are private property owners and aquifer users protected with a surety bond?

Comment 13.3 Division Response

See the Division's response to Group Comment 2 indicating that the Financial Assurance mechanism will be amended and republished.

Comment 13.4

4. Can the Division of Water Quality or Lisbon Valley Copper mine give us as land owners and domestic drinkers from the Burro Canyon Aquifer, a 100% assurance that our water rights will not be infringed upon? Can they guarantee that our water will not be depleted or contaminated? If not, I am requesting that a surety bond be established for the domestic drinkers of the Burro Canyon Aquifer and Navajo aquifer within the permit study boundary. Something that will protect our water rights and our health, in case something does go wrong.

Comment 13.4: Division Response

The Division will enforce the conditions in the Draft Permit (DWQ 2020a) to ensure LVMC maintains compliance with all permit conditions, including monitoring of the proposed Aquifer Exemption boundary, to ensure that ISR operations do not affect the BC Aquifer outside the exempted area. The financial assurance requirements and conditions cover the project area only. They do not cover potential impacts to private citizens or their property because the governing UIC statute and regulations do not direct the Division to consider these factors in its calculation.

See also the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. The Division does not have the authority to regulate beyond the governing UIC statute and regulations; water rights are under the authority of the Utah Department of Natural Resources Division of Water Rights.

Comment 13.5

5. In the draft permit from the Utah Division of Water Quality class III area permit underground injection control (UIC) program, Part III section I Mechanical Integrity, it states all of the requirements to maintain mechanical integrity for all of the ISR wells. But in Part II (D)(17)(c) it states "The Director may allow the owner/operator of a well which lacks internal mechanical integrity pursuant to Part III (I)(1)(a) of this permit to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs." This seems like some kind of loop hole. What are the criteria that the Director will use and does it still ensure protection of the water and the downstream water users? Also in Part III (I)(9)(b) Internal Mechanical Integrity Exception it states "According to 40 CFR 144.51(q)(3), The Director may allow the owner/operator of a well which lacks internal mechanical integrity (Part III (I)(1)(a) of this permit) to continue or resume injection, if the owner or operator has made a satisfactory demonstration of external mechanical integrity (that is, that there is no movement of fluid into or between USDWs.) Such proposals of satisfactory demonstration shall be reviewed and approved or denied on an individual basis." My question is, why would you allow Lisbon Valley Copper Mine to continue to use a well that lacks internal or external mechanical integrity? Is that not taking an unnecessary risk of contaminating the aquifer, harming downstream users, and the public in general? Why not make them restore mechanical integrity before continuing or resuming injection?

Comment 13.5: Division Response

Mechanical integrity of injection wells is required by the Draft Permit Part III.I and Attachment L (DWQ 2020a). The provision in the Draft Permit referenced here falls under 40 CFR § 144.51(q)(3), which allows the owner or operator to resume injection where a well lacks mechanical integrity after written notice from the Director that the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs.

Comment 13.6

6. In the draft permit from the Utah Division of Water Quality class III area permit underground injection control (UIC) program, part II(D)(5) Proper Operation and Maintenance (40 CFR 144.51(e)) it states "Lisbon Valley shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by Lisbon Valley to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate

funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit." In March of 2020 Lisbon Valley Copper Mine shut down due to lack of funding. They could not make payroll and still have not paid employees for their vacation pay. The employees had to use The Utah Department of Labor to get the money that was deposited by Lisbon Valley Copper Mine and then shortly thereafter removed from their bank accounts. The former employees are still fighting for the vacation pay that Lisbon Valley Copper Mine still owes them. Earlier this year an owner of Lisbon Valley Copper Mine struck a deal with the San Juan County Commission to start making payments on back taxes from 2014 to 2019 and was forgiven around \$300,000 in penalties and interest. The Lisbon Valley Copper Mine agreed to start making payments to the county of around \$200,000 per month. As of November 20th of 2020, the San Juan County Treasures office reported that no payments from Lisbon Valley Copper Mine have been received and they owe over \$2 million in taxes to San Juan County. Earlier this year the Division of Oil, Gas and Mining issued an emergency order to the Lisbon Valley Copper Mine. The mine was not capable of maintaining their facilities and nearly missed an environmental disaster. How has Lisbon Valley Mining Company demonstrated the requirements of part II(D)(5) of the draft permit? How can Lisbon Valley Mining Company move forward without properly addressing the past? The bond is for future work and liabilities, but clearly the financial integrity of the company is suspect and past performance is a pretty good indicator of future behavior. How has the Division of Water Quality accounted for this?

Comment 13.6: Division Response

See the Division's response to Group Comment 2 indicating that the Financial Assurance mechanism will be amended and republished.

Comment 13.7

7. In the draft permit from the Utah Division of Water Quality class III area permit underground injection control (UIC) program, part II(D)(6)(b)(1)(ii) it states "The Lisbon Valley's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the Lisbon Valley's misrepresentation of any relevant facts at any time; or" Has Lisbon Valley disclosed any of the facts that I presented in my question #6? Has Lisbon Valley Copper Mine disclosed that there is a sale pending upon approval of this permit? Because of the attachments that the Division of Water Quality has posted on their website, it is obvious to me that the public has not seen the entire application from Lisbon Valley Copper Mine. It starts with pages 15 and 16 and then jumps to page 97. I'm not sure where the missing pages are. Page 97 starts with 5.0 Part D-Corrective Action Plan. Where are 1.0 through 4.0? 16.0 Part N- Aquifer Exemption. Who decides that an aquifer will NEVER be used as a source of drinking water? There are many examples across the West where pipelines are ran for miles to provide drinking water to areas that have outgrown their source of drinking water. Advances in water treatment science is proving that water that was once deemed

unusable can now be safe to drink. And did I mention that the Burro Canyon Aquifer is a source of drinking water for my parents every day? Does the Division of Water Quality really trust the information they have received from Lisbon Valley Cooper Mine? Is there information that has not been made public?

Comment 13.7: Division Response

Given that the Division does not have the authority to consider a potential future sale based on the applicable laws, whether LVMC has disclosed such information is not relevant to the Draft Permit decision. The Division has made available all original permit application materials and versions thereof and additional reference materials that were used to write the Draft Permit (DWQ 2020a). However, not all materials provided by the application were necessary or included in the Draft Permit and thus are not approved by the Division.

Attachments to the Draft Permit, such as the Corrective Action Plan (DWQ 2020a: Attachment C) are copied from LVMC's application and have been excerpted to reflect those parts of LVMC's plan that have been accepted and approved by the Division for the Draft Permit. The Division will amend the pagination to alleviate confusion regarding the attachments.

See also the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished.

Comment 13.8

8. In the draft permit from the Utah Division of Water Quality class III area permit underground injection control (UIC) program, part II(D)(6)(b)(1)(iii) it states "A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;" If there is any chance that this permit would allow Lisbon Valley Copper Mine to perform activities that endanger human health or the environment why would you even consider granting this permit in the first place? I am formally requesting a separate surety bond be put in place to protect the Burro Canyon Aquifer, Navajo Aquifer, and the people that drink from them; not just in the exempt portion of the aquifer. If the Lisbon Valley Copper Mine makes a mistake in this complicated ISR process and either depletes our source of drinking water or contaminates it, there should be monies set aside to make things whole.

Comment 13.8: Division Response

The cited paragraph is a condition in the permit that allows the Director to terminate the permit if he/she finds that the permitted activity endangers human health or the environment. No such finding has been made. The governing UIC regulations do not allow the Division to impose a separate surety bond for anything outside the proposed Aquifer Exemption and project boundaries.

Comment 13.9

9. In the draft permit from the Utah Division of Water Quality class III area permit underground injection control (UIC) program, part II(D)(12)(h) Other Information, it states "When Lisbon Valley becomes aware of a failure to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, Lisbon Valley shall submit such facts or information within 10 days after becoming aware of the failure to submit relevant facts." So, we all just hope that Lisbon Valley Copper Mine will be honest in their reporting? They are a copper mine that wants to extract as much copper from the Burro Canyon Aquifer as cheap as they can. Why would they report anything other than "Everything is going great! Don't worry about us. We are doing just fine." Why would the Division of Water Quality not require that a 3rd party do all of the monitoring of the water in the Burro Canyon Aquifer and Navajo Aquifer for quality and quantity before, during, and after Lisbon Valley Copper Mine uses the ISR process in Lower Lisbon Valley?

Comment 13.9: Division Response

Periodic LVMC facility inspections and monitoring by trained and certified Division staff will ensure that violations are detected and corrected under the authority of 40 C.F.R. § 145.12(c). The Division does not have the authority to require third-party monitoring. The Division also does not have the authority to assume dishonesty in reporting and will verify that Draft Permit requirements are being met based on reporting, inspection, and documentation.

Comment 13.10

10. In the Attachments provided on your website page 106. (I am not sure if these attachments are part of the permit application or if they are just some information that has been shared with the public) 7.4.1 Background "PW-12 is an important supply well located in LLV near the GTO deposit in the BC aquifer. Since installation in 2012 pumpage from PW-12 has locally dewatered the BC aquifer including water levels in former BC production well PW-5. This well is currently used as piezometer with insufficient water for pumping." So, they dried up their own well by pumping too much water from PW-12? How far did water levels in PW-5 drop? Later it continues, "Well locations and GTO fault are shown on Figure 7.6" I can't find figure 7.6? Later in the same section it continues, "The summer of 2019 was highly problematic with pump failures at PW-12 and pump cavitation issues at the Woods well. This resulted in both wells being pumped intermittently and at separate times." What is happening here? Does the Copper mine already have water problems? They sure struggled in the summer of 2019. Later it continues, "Figure 7.7 shows the PW-5 pressure hydrograph" I can't find figure 7.7 anywhere either. Later it continues "Woods well began its seasonal pumpage on July 8 at a rate of 150 gpm. At this time, PW-12 was pumping at a rate of 120 gpm. on July 14, the column pipe failed on PW-12 damaging the pump and taking the well out of service." "The pump was reinstalled in in PW-12 on July 17 without knowledge that the pump was damaged." "Near the

end of July, the flow rate from the damaged pump in PW-12 began to decline. PW-12 was taken out of service a 3rd time on July 31 and the pump replaced on August 11." All of this points out that these wells did not have mechanical integrity, and Lisbon Valley Copper Mine's competency comes into question when they put a damaged pump back down the well. The well had to be taken out of service three times in 15 days. The point of the study does show that what happens in one part of the aquifer really does affect what is going on in other parts of the aquifer. Our well is not separated by a naturally occurring fault or a natural aquitard of some sort. The only thing that separates our drinking water from the Lisbon Valley Copper Mine's acid is a blue line that someone drew on a map. Assurances need to be put in place by the Division of Water Quality that if anything goes wrong, the aquifer will be restored and our drinking water will be safe.

Comment 13.10: Division Response

Attachments that are not part of the Draft Permit (DWQ 2020a) and thus have not been approved/accepted by the Division are not enforceable requirements. The Division will enforce the Draft Permit to ensure LVMC maintains compliance with all permit conditions pertaining to wells, well performance, and mechanical integrity. The pumping activities described relate to water production wells and do not pertain to UIC-regulated Class III injection wells.

Comment 13.11

11. This ISR process obviously requires a lot of water. Where will Lisbon Valley Copper Mine get all of the water that is required? They already struggle to keep themselves supplied with a reliable source of water.

Comment 13.11: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations; water rights are under the authority of the Utah Department of Natural Resources Division of Water Rights.

Comment 13.12

12. With the ISR process, what happens to the other minerals that are extracted, like uranium? Is the uranium separated somehow or is that what the settling ponds are for?

Comment 13.12: Division Response

Dissolved constituents like uranium that are not extracted from the leach solution and concentrations of these constituents will build until they reach an equilibrium solubility condition or steady state condition with regard to water consumption and loss. The concentrations of these constituents are expected to be

very similar in the heap leach solutions generated by current operations. The residual leach solutions will be evaporated at closure to precipitate dissolved constituents in the evaporation and settling ponds where they will be contained by an impermeable liner and, ultimately, a cover at closure.

Comment 13.13

13. To create an inward flow to the wellfield, the aquifer is drawn down. How will that not affect our shallow well?

It is imperative that these questions and others raised by the public be adequately addressed before moving forward in this process. To effectively comment the public needs these questions answered and time to respond. The Division of Water Quality needs to reconsider this permit. It will give the Lisbon Valley Copper Mine the green light to make a mess for us to deal with for generations to come.

The Utah Division of Water Quality should protect the public interest, ensure that drinking water and water in general is safe. Water is an important and scarce commodity in the West and the Division of Water Quality should employ all measures to protect and minimize waste or contamination. Don't let the Lisbon Valley Mining Company manipulate you like they have done to the citizens and Commissioners of San Juan County.

In previous public comment periods regarding the Lisbon Valley Copper Mine, there has not been a lot of public interest. This is simply because most of the public in San Juan County supports multiple use. The Lisbon Valley Copper Mine has a boundary set by the Division of Oil, Gas, and Mining that they must stay within. The difference this time, is the fact that this permit will allow them to jump the fence and inject acid into an aquifer that is currently being used for domestic drinking, irrigation, and livestock watering. If the Lisbon Valley Mining Company will stay within their current permitted boundary, and not inject acid into the Burro Canyon aquifer, we will continue to live, work, and play just down the road.

My family wants to feel safe living, working, and playing next to a copper mine that does not share our same values. We truly care about the environment and the water that we drink and sustain ourselves with in a part of the world that has a very limited amount of water and other resources.

Thank you for your consideration in this very important matter. I am requesting a written response to these questions and want to be included on all future correspondence as an affected public.

Comment 13.13: Division Response

The overall measures and basis that the Division has taken in the Draft Permit (DWQ 2020a) to ensure protection of water quality outside the permitted area are summarized in the Division's response to Group Comment 1 above. The Division does not have the authority to regulate beyond the governing UIC statute

and regulations; water rights are under the authority of the Utah Department of Natural Resources, Division of Water Rights. However, if water levels in monitoring wells near the area permit boundary or proposed Aquifer Exemption boundary are affected, the Division has the authority to require corrective action under the requirements in Part III.C and Attachment C of the Draft Permit (DWQ 2020a) to prevent impacts to water quality that might result from ISR operations or water withdrawals from inside or outside the permit area and the proposed Aquifer Exemption. See also the Division's response to Group Comment 8 above indicating that the Aquifer Exemption Request will be amended for clarity and republished.

**COMMENT 14: PETER STOCKUS, AMERICAN MOTORCYCLIST ASSOCIATION GOVERNMENT
RELATIONS MANAGER, OFF ROAD, DECEMBER 3, 2020**

This letter is being submitted to express our concern with the Draft Permit for Underground Injection Control Class III Area, Draft Permit No. UTU-37-AP-5D5F693, In Situ Copper Recovery from the Lisbon Valley Mining Company LLC, San Juan County, Utah.

Founded in 1924, the AMA is the premier advocate of the motorcycling community. We represent the interests of millions of on- and off-highway motorcyclists. Our mission is to promote the motorcycle lifestyle and protect the future of motorcycling.

The AMA is particularly worried about the impact this mining operation could have on the nearby 3 Step Hideaway, an 80-acre retreat focused on off-highway motor vehicle recreation. This retreat is very popular with the off-highway motorcycling community in Utah and is unique, in that it provides fuel, lodging and food.

While we realize your division's decision will be based on technical merits and considerations, we believe it necessary to express our concerns and ask for the utmost scrutiny when examining ground water and aquifer systems. If the aquifer system at 3 Step Hideaway were to be contaminated, the effects would be dire to their business and the motorcycle community at-large.

In conclusion, the AMA asks that you give this permit the utmost technical analysis in your consideration and that your decision appropriately addresses the aquifers and wells of the 3 Step Hideaway.

Comment 14: Division Response

As explained in the Draft Permit (DWQ 2020a), natural geologic structures and institutional controls will be used to monitor and protect groundwater resources outside the proposed Aquifer Exemption boundary. The hydrology and geology of the Lisbon Valley copper deposits are well suited for ISR because there are natural hydraulic barriers on three sides, including those that protect the groundwater resources used by the 3-Step Hideaway. Permit conditions and monitoring are designed to protect the BC and N Aquifers outside of the proposed Aquifer Exemption Boundary, and a higher density of monitoring wells

will be constructed on the eastern border of the Aquifer Exemption and project boundaries. Concurrent groundwater restoration is required by the Draft Permit (DWQ 2020a) after copper recovery is complete to mitigate long-term migration of residual leach solutions.

See also the Division's responses to Group Comments 1, 8, and 9 in Section II of this Response Document.

COMMENT 15: KENNETH MARYBOY, CHAIRMAN, SAN JUAN COUNTY COMMISSION, DECEMBER 3, 2020

We thank you and the Division of Water Quality for holding the public hearing on Lisbon Valley Mine's application for an Underground Injection Control Class III Permit for in situ recovery of copper on November 24, 2020. This gave citizens the opportunity to formally present their statements on the proposal. However, we were hopeful that the hearing would have also provided an opportunity for questions to be asked and answered. Since a question and answer opportunity was not provided some of our comments that follow include questions which we hope you will answer.

San Juan County has concerns about the potential effects the proposed in situ mining may have on groundwater quality and quantity in the area. Several county residents including those residing in Lower Lisbon Valley have expressed their serious concerns about the potential adverse effects of in situ mining on water in the Burro Canyon aquifer. Residents with water wells in the area are especially concerned about the potential adverse effect of underground injection of an acid solution into the aquifer that supplies their domestic and livestock wells.

We understand from your presentation at the hearing and documents provided with the application that the Burro Canyon aquifer in Lower Lisbon Valley is basically contained in the valley by faults and geologic structure. We don't understand the rationale for the eastern boundary of the aquifer exemption. It appears to be a straight line running north/south whereas the other boundaries appear to follow topographic or fault lines. It is interesting that this eastern boundary is located a short distance west from the Wilcox well. We would like an explanation of how this boundary was determined.

The southern boundary of the aquifer exemption appears to include or be very close to the Stevenson well at the Three Step Hideaway. Is the Stevenson well inside or outside of the exemption area?

Regardless whether these private domestic wells are inside or near the exemption boundary, they are within the proposed in situ mining boundary. We share these well users concerns about potential contamination of their wells with the proposed mining solution.

Without more specific known likely effects of the proposed in situ mining operation on groundwater and more assurance that the proposed injection of a sulfuric acid solution into the ground water would not have adverse effects on groundwater quality and quantity we cannot support and oppose the issuance of

a permit for underground injection of a recovery fluid as stated on the current application from Lisbon Valley Mine.

We respectfully request that the current comment period for this application be extended 60 days. The application includes a large amount of complex information difficult to understand leading to questions which have not been answered. Extension of the comment period would allow citizens and the County more time to study the information and get answers to questions which would better inform comments.

We appreciate this opportunity to comment and look forward to your response to our and residents questions.

Comment 15: Division Response:

The San Juan County Commissioner comments concerning protection of groundwater resources are similar to many public comments and are addressed by the Division in Group Comment responses found in Section II of this Response Document. Additionally, see the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

According to the Utah Division of Water Rights, the Stevenson well (according to coordinates in the Universal Transverse Mercator system, not latitude and longitude) is between 100 and 200 feet south and outside of the proposed Aquifer Exemption and Draft Permit boundary submitted electronically in Geographic Information System format by LVMC. The Division of Water Rights database has a disclaimer on well location and data accuracy—please note that some map projections like the one shown in the Draft Permit (DWQ 2020a: Attachment B, Figure 3.2) can mathematically distort apparent distances because of the projection system and resolution used by the person who created the map. This is not intentional but is a function of geographic projection methods. Non-governmental GPS units do not have the accuracy or legal validity needed to determine an exact well location relative to the proposed Aquifer Exemption boundary. Regardless of surface location, the Stevenson well is located in the N Aquifer and is upgradient of the portion of the BC Aquifer Exemption that is being requested by LVMC. Thus, even if the Stevenson well was within this boundary, it would not qualify as a source of drinking water within the proposed Aquifer Exemption volume because it is in a different aquifer.

In summary, according to the Division's examination of the available data, the project area does not overlap the Stevenson well, and this boundary does not in any way convey property rights or exclusive privilege per Draft Permit Part II.D.7 (DWQ 2020a). Any injection activity within the boundary of the Draft Permit area and Aquifer Exemption volume is subject to its conditions and obligations and does not allow water quality impacts outside its borders.

The Division will allow for public comment on the republished Aquifer Exemption Request and associated Financial Assurance mechanism.

COMMENT 16: TANYA ZILBERBERG, PRIVATE CITIZEN, DECEMBER 2, 2020

My name is Tanya Zilberberg. I have been a guest at 3 Step Hideaway in Lisbon Valley many times and love the quiet remote solitude of Lisbon Valley. My comments relate to the permit requirement for Financial Responsibility. Attachment J for the draft permit is incomplete and I'm sure your office is struggling with this.

Obviously, there exists the risk of contaminating area water, otherwise there would be no need for monitoring wells, nor aquifer rinsing as part of the reclamation plan.

The acidic injectate is known to mobilize heavy metals and radioactive isotopes in addition to copper. Because the half-life of those radioactive elements can last centuries, the duration of monitoring and mitigation should at least equal that duration. It will be difficult, if not impossible for the DWQ to calculate the value of a surety bond required in order to monitor and reclaim radioactive contamination in perpetuity.

One strategy to help estimate surety and reclamation costs would be to evaluate the duration and costs of reclamation for other large scale, in situ copper recovery operations in similar sandstone geology. However none exist to compare. This project would be the first of its kind, anywhere.

A second strategy to assess these costs would be to utilize data from small scale, in situ copper recovery operations that have completed their reclamation phase, even if they are not in a similar sandstone geology. However none of those exist to compare either, since those in current operation have yet to reach their reclamation phase.

My next concern has to do with the financial responsibility for contingencies in the event that monitoring wells do detect contamination, or that as a consequence of the differential pumping used to create the hydrostatic gradient, the current landowners' wells are depleted.

The fair approach would be for the LVMC to maintain funds to replace the losses to health and livelihood that the current users in the proposed area would suffer in the event of contamination or depletion to their drinking water. I don't see that concern or consideration noted anywhere in the Financial responsibility section.

Given the cost of fulfilling these two Financial Responsibilities:

- 1. monitoring and mitigation in perpetuity, and*
- 2. insuring fair compensation for the loss of health and livelihood in the event of water contamination or depletion,*

It is inconceivable that any corporation could ever successfully demonstrate adequate financial responsibility.

Perhaps the bigger issue is this: In situ recovery of copper may prove one day to be the safest, most efficient, economical, and environmentally friendly method of extracting copper. In order for the technique be used widely, the early adopters MUST meet with undisputed success. Even a modest failure here could set the field back decades.

I would ask the DEQ and other entities involved in the permitting process to consider that for even those who support and advocate for the technique, Lisbon Vally may not be the right proving grounds for in situ recovery's debut in Utah, especially since for many reasons, the project appears to be a set-up for failure already.

Comment 16: Division Response

Many of the comments expressed are addressed in the Group Comments portion of this Response Document and in the Introduction (Part I) of this document. Specifically, see the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished.

The acidic leachate that is used to mobilize and recover copper will mobilize metals and other constituents such as uranium and radioactive isotopes. These constituents will be contained within the in situ copper recovery circuit until closure, at which time the residual leach solution will be treated and/or disposed of safely to restore groundwater.

COMMENT 17: IVAN WEBER, PRINCIPAL/OWNER, WEBER SUSTAINABILITY CONSULTING (RETIRED), DECEMBER 7, 2020

COMMENTS - Lisbon Valley Copper ISL Mining: The project for which permit application is occurring dooms wells, water supplies, seeps and habitat areas in the immediate vicinity and for many miles distant, for inestimable timeframes. Worst of all, only a very stable, extremely solvent parent company could be trusted with management, corrective actions that may be required, and most of all with closure and restoration. In paragraph "17.0 Part O - Expected Changes Due to Injection" the Technical Report (pp. 180-181 / p. 107 of the PDF file) states:

"Expected changes due to injection include changes in aquifer chemistry, head pressures, and local gradients. All changes are transient and will be restored after mining."

The leap of faith required to accept this statement assuming aquifer(s) restoration literally is enormous. Of all the biogeochemical actions we can engineer to alter, or to transmit through, geological formations,

the injection of highly oxidizing sulfuric acid solutions is among the most rampant, the most uncontrollable, the least subject to the environmental engineering disciplines through whose lenses we see ourselves as being “civilized.”

*‘Place’ is the basis of sustainability. Recognition of the attributes, the characteristics, the parameters of where we are, the location of our inquiries at the present moment, is fundamental to any questions we seek to answer --- assuming, that is, that we wish to find “sustainable” formulations in response to our inquiries. Given the complexity of, and the numbers of, variables inherent in these inquiries directed toward ground water flow and chemistry, **we despair of our collective** cultural strength to identify answers for the environmental policy questions presented by corporations that seem to be indifferent to human cultures, wild lives, and the systems that support cultures and lives into the indefinite future.*

It follows that corporations and government agencies must become increasingly adept at recognizing the key elements of ‘place’ in sustainable technical and ethical analysis. This seems particularly true when acidic poisons are injected into hidden aquifers.

In the Lisbon Valley Mining in-situ leaching proposal case, if something approaching “sustainable mining” or “sustainable materials extraction and development” are to be approached, then critical processes and outcomes must be envisioned, and both qualitatively and quantitatively analyzed. That is asking a great deal of an industry that has, historically, not cared at all about effects on anything or anyone on the affected site or in surrounding environments. We cannot begrudge the company’s desire to capture mineral wealth from geologic strata that present themselves to exploratory drill rigs and geochemical experts capable of quantifying potential economic gains. What we can, and will, object to is the suspension of conscience by those who make choices for the future of a living place, as in this permit process, authorizing or not authorizing the injection of powerful solvents into the earth, while pretending to know --- with scientific certainty --- the consequences of that injection.

Phases of copper-targeting sulfuric acid “lixiviant” injection, circulation, and withdrawal break down into very complex geochemical diagrams and spreadsheets. This is unavoidable and, while unfortunate, it creates --- we suggest this with trepidation --- administratively untenable puzzles and challenges. If the challenge of the Lisbon Valley copper ISL mine is to be considered responsibly and with care for human and cultural values, hydrological values, ecological values, wildlife values, and values contingent on geospatial disciplines only recently emerging into public access, such as ArcGIS and advanced watershed studies, then you and your staff are presented with disciplinary challenges that are likely not to be prepared to meet with adequate time and preparation for these tasks.

Your office faces additional complexities, such as that described on page 136 of the Technical Report, under “11.7 Groundwater Restoration” (selecting from the text therein, and in following paragraphs):

“Groundwater restoration in each well field will be conducted in accordance with UDWQ Class III permit requirements. Per the UDWQ UIC Guidelines, the purpose of the Class III UIC Permit for which the Company is proposing, is to “Inject fluids for the in situ extraction of minerals or metals from the ore bodies that have not been previously mined by conventional methods.” [Description follows of data acquisition to characterize existing conditions, and to enable formulation of a ‘comprehensive Groundwater Restoration Plan.]

“11.7.1 Target Restoration Goals: Groundwater restoration, or aquifer restoration, will be performed pursuant to UDWQ requirements to protect USDWs. The groundwater restoration program for all well fields will be conducted pursuant to UAC R317.7.” [Procedures follow for compilation of ‘indicator constituents’ in relevant strata of wells created for this purpose, and then the creation of ‘target restoration goals (TRGs).]

*“11.7.2 Groundwater Restoration Process: This and following subsections describe ‘groundwater rinse and neutralization’ (11.7.4) that are prerequisite to ‘closure of the wellfield’. **This paragraph appears to offer numerous escape routes for the Company, culminating in the following sentence: “Rinsing, deep well disposal and land application will be continued until asymptotic TDS concentrations are identified, or as long as technically and economically feasible.”***

It is our contention that this entire set of requirements is fundamentally unenforceable, for any of the sequence of “mine blocks” for which the procedure is undertaken.

What is at stake here is expressed in terminologies barely touched upon in this document that is under review: Watersheds, seeps, springs, drinking water wells, ecosystem protection --- terms that recognize the overarching importance of overall living ecosystem and hydro-system integrity, over timeframes that cannot possibly be enforced by administrative measures prescribed in this governing document. This is the nexus at which the ‘scale’ and ‘place’ awareness for which ‘sustainable mining’ legitimately campaigns must be explored, honored, and translated for each specific place into regulatory requirements that are legally and financially binding, in perpetuity. Without creating long-term burdens for public agencies, or that create biogeochemical exposures to metals either in Nature or through human uses of well-water or of natural waters emerging from the earth.

Climate change must also be accounted for, particularly in this prototypically arid region of the North American continent. How will dramatic reductions of already rare, biogeochemically safe water supplies in a seriously warmed environment, as is projected to be centered squarely upon the region in which the Lisbon Valley ISL project is situated, can wells and natural occurrences of water at surface be kept rendered healthful, non-toxic, and ‘sustainable’, not only for humans, but also for livestock and the full diversity of wildlife dependent on semi-desert and desert water supplies? The scale of our efforts to answer this question should consider the entire Dolores River watershed, as well as the parameters of the

“wellfield” under permit consideration. *It’s likely that background, contextual analyses and geospatial data accumulations are not adequate for this complex set of tasks, but there is no time like the present to begin. Climate change analysis must be carried out essentially everywhere, focusing on carbon balance calculations to account for transactions among aggressively oxidizing acids and various neutralized (reduced) carbon compounds.*

At the very least, the proprietor of the ISL mine lease must demonstrate financial resources, to be administered according to a competent plan, adequate to execute, manage, close, and remediate injection leaching operations, as outlined in the plan --- in perpetuity.

This is a tall order, demanding both substantial technical and financial capabilities on the part of the mining company, but also technical and financial capabilities on the part of the surety structure backing up the mining company, itself. Needless to say, approval of this permit imposes enormous obligations, as well, on Federal, State and County administrative bodies. Bonds, moreover, must be capable of supporting the permit’s core objectives, though we harbor no illusions that the institutions that certify these bonds at present will remain in existence for the century or more into that future that will be required for meaningful support of closure and remediation of contaminated ground water resources in question. It would be a remarkable bond, indeed, to cover this set of obligations adequately.

Comment 17: Division Response

Per Group Comment Response 4, the Division does not have the authority to regulate beyond the governing UIC statute and regulations, which do not allow the Division to consider financial or tax status generally, outside the financial assurance mechanism.

While not as well known or common as conventional mining with open pit or underground excavation, in situ copper and other mineral resource recovery is permitted under the UIC program statutes and regulations. Several research, pilot, or commercial in situ copper recovery projects, like the Florence and Gunnison Projects in Arizona that have been permitted by the EPA under UIC regulations, have been successfully completed in the United States in the past five decades and have contained and treated leach solutions within the designated project areas.

See the Division’s responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished.

COMMENT 18: DAVID ROCCAFORTE, PRIVATE CITIZEN, DECEMBER 13, 2020

In reviewing the Class III Underground Injection Control Permit Application submitted by Lisbon Valley Mining Company LLC, Lower Lisbon Valley LLV Project posted for public notice, it appears that figure 3.1

(AOR) is missing. Page 28 of the Lower Lisbon Valley ISR Technical Report says only "[This page intentionally left blank. See attached fold-out of Figure 3.1]"

Could you please forward me a copy of figure 3.1 to review and/or post it to the DWQ website? <<https://deq.utah.gov/businesses-facilities/lisbon-valley-mining-co-llc>>

Comment 18: Division Response

Figure 3.1 of the Technical Report (LVMC 2020) is a large fold out map that was submitted as a separate file. A copy was sent to this commenter and posted to the Division's website on January 4th, 2021.

COMMENT 19: GEORGE R. STEVENSON JR., PRIVATE CITIZEN, JANUARY 10, 2021

I am a frequent visitor to Lower Lisbon Valley and have family residing there.

I strongly oppose this project which would allow the pumping of concentrated sulfuric acid into the ground to saturate the soil to a depth of up to 900 feet.

If the project is implemented as proposed, it would become an enormous liability to the state of Utah for a number of reasons, including the following:

- 1. The subject mining company, Lisbon Valley Mining Company, has a terrible track record and apparently has not paid applicable taxes to the County or State for many years. To grant this company an exemption to Division of Water Quality (DWQ) Standards so this project may proceed is poorly considered. Should containment be breached (which is certainly possible, even probable) LVMC cannot be relied upon for remediation work. This creates massive liability for the State of Utah.*
- 2. Three-Step Hideaway, which is a bed-and-breakfast establishment in Lower Lisbon Valley, caters to motorcycle enthusiasts. Three-Step Hideaway is located on the Trans-America Trail and is known worldwide as a basecamp from which to explore southeastern Utah. They draw visitors from Europe, Australia, Canada, Asia, the Middle East, and South America. Should this project proceed, Three-Step Hideaway will surely be closed; the proposed acid-saturated area comes within a stone's throw (literally) of their water well. Loss of this tourism would be detrimental to the State of Utah.*
- 3. The proposed project is located along the Colorado border and will undoubtedly release massive amounts of sulfuric acid into the watershed of the Dolores River in Colorado. The entire Lisbon Valley, in fact, drains into Colorado and the Delores River watershed. This exposes the State of Utah to another source of considerable liability.*

In addition to considering the liability this project incurs to the State of Utah, I ask you to consider the damage and detriment this project would cause the neighboring families and businesses. In the last century, poisoning a man's water well was a hanging offense. In modern times it seems unlikely that one would seek out and righteously deal with those individuals responsible. Because these victims cannot fairly defend themselves from government decisions, I ask that you seriously consider the harm this project would inflict on them.

I ask you to NOT approve the permit for this project.

Comment 19: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, which do not allow the Division to consider financial or tax status outside the financial assurance mechanism in its determination.

See the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. Upon completion of in situ copper recovery, the Draft Permit (DWQ 2020a) requires that LVMC restore groundwater quality concurrently in the BC Aquifer and wellfield.

The Draft Permit Part II.D.12.h (DWQ 2020a) requires that if LVMC becomes aware of a failure to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, LVMC shall submit such facts or information within ten days after becoming aware of the failure to submit relevant facts. If LVMC violates this requirement, the Division will take enforcement action. Periodic LVMC facility inspections and monitoring by trained and certified Division staff will ensure that violations are detected and corrected under the authority of 40 C.F.R. § 145.12(c).

While the UIC permit and surety requirements only consider closure of wells, wellfields, and groundwater restoration, other permits and spill prevention control and countermeasure plans will be required for the LVMC in situ copper recovery project to commence. The UIC permit also requires financial assurances for closure, reclamation, and restoration of surface facilities and disturbances.

COMMENT 20: J. DAVID ROCCAFORTE, PRIVATE CITIZEN, JANUARY 8, 2021

"It is difficult to get a man to understand something, when his salary depends on his not understanding it."

— Upton Sinclair

Note: page references are to Lisbon Valley Mining Company (LVMC)'s Lower Lisbon Valley ISR Technical Report DWQ-2020-021046.pdf, all highlighting added.

*p. 17, "The Project Area is located in the Lisbon Valley Mining District, **a prolific producer** of brine metals, including copper..."*

Granting an aquifer exemption is not a matter of entrusting a corporation to become the primary steward of the aquifer, it is actually GIVING them the aquifer explicitly to pollute. In their application and in the press, LVMC makes statements in order to convince the permitting entities and the world of their worthiness to receive such a gracious gift of a whole aquifer. The stories they tell, such as the history of successful extraction of copper from Lisbon Valley, copper procured by ISR supporting "green" technology, their corporation's financial stability, and their record of environmental responsibility, are just that... stories.

Since LVMC has presented their version, and are wrong about so many other things, I am compelled to present the corrected and annotated reality:

"History is a set of lies agreed upon."

— Napoleon Bonaparte

p. 20 "1.3 Project History"

*"...the **Blackbird mine** prior to the 1950s..."*

Reality: The Blackbird mine went **bankrupt**.

< <https://geology.utah.gov/map-pub/survey-notes/lisbon-valley-copper-project/> >

*p. 21 "Between 1942 and 1946 the **Ohio Copper Company** of Utah mined and treated more than 150,000 tons..."*

Reality: The Ohio Copper Company went **bankrupt**.

< <https://www.newspapers.com/clip/832193/ohio-copper-company-of-utah-debtor/> >

p. 21 "In the early 1960s, Micro-Copper Corporation set up a small 200 ton-per-day acid leach..."

Reality: The Micro-Copper Corporation went **bankrupt**.

< <http://docs.azgs.az.gov/SpecColl/1994-01/1994-01-0954E.pdf> >

p. 21 “...in the 1960s. **Cleveland Cliffs Corporation** conducted the first documented exploration drilling...”

Reality: Cleveland Cliffs **quickly sold their interest, and remain in business today.**

< <http://www.clevelandcliffs.com/English/home/default.aspx> >

p. 21 “...in 1969... The objective of **Keystone-Wallace** was to operate and upgrade the leach and precipitation plant at Big Indian, and further develop the copper resources at both ends of Lisbon Valley.”

Reality: Keystone-Wallace went **bankrupt.**

<https://www.moabsunnews.com/news/article_0bf1170c-359a-11eb-8d50-bb68ea14f62f.html>

p. 21 “In 1974 **Centennial Development** decided not to proceed with development of the Project, citing weak copper prices and an inadequate return on investment.”

Reality: Centennial **remained solvent.** < <https://thediggings.com/owners/1210174> >

p. 21 “In 1975, **Noranda Exploration...** failed to find their minimum target size and **dropped their option** in 1976”

Reality: Noranda Exploration **remained solvent.**

< [https://en.wikipedia.org/wiki/Noranda_\(mining_company\)](https://en.wikipedia.org/wiki/Noranda_(mining_company)) >

p. 22 in 1985, “Due to continued depressed copper prices, **Kelmine Corporation** was unable to finance development of the Project, and **assigned their lease** to MLP Associates”

“In 1989, **MLP Associates brought in Sindor Inc.**, a Canadian Junior company, to evaluate the feasibility of developing the property as an open pit heap leach operation with recovery of copper by SX-EW processing.

Sindor did additional drilling but was **unable to raise sufficient capital** to develop the property and withdrew in 1990.”

Reality: Sindor **closed their business.**

< <https://stage.northernminer.com/sindor-shelves-lisbon-valley/> >

p. 22 “In 1993, **Kennecott Exploration Inc. optioned the property...** failed to find their minimum target size and withdrew later in 1993.”

Reality: Kennecott Exploration Inc. **remains in business.**

< <https://riotintokennecott.com/about-us/our-history/> >

p. 22 **“St. Mary Minerals Inc., assigned the option to a newly formed company, Summo Minerals Corporation...”**

Reality: St. Mary’s **remains in business.**

< <http://sm-energy.com/about-us/history-timeline/> >

p. 22 **“2002 Summo Minerals Corporation became Constellation Copper Corporation by virtue of a name change”...**

Reality: Constellation Copper **filed for bankruptcy** protection during 2008.

< <https://www.hcn.org/issues/364/17520> >

p. 23 **“Lisbon Valley Mining Company was purchased out of Chapter 11 in 2009”**

Reality: LVMC has not gone bankrupt, ...**yet.**

< <https://www.sltrib.com/news/2019/10/27/san-juan-county/> >

p. 24 **“1.5 Health, Safety and Environmental Responsibilities”**

“The Company has been regulated by the Mine Safety and Health Administration (MSHA), an agency of the United States Department of Labor, and multiple Federal and State environmental agencies since 2005 and has maintained exemplary compliance records for both safety and environmental compliance for fifteen years. The Company will continue to maintain the health and safety of the workers, general public, and the environment.”

Reality: 1.5 **Health, Safety and Environmental Responsibilities**

Despite regulation by the Mine Safety and Health Administration (MSHA), an agency of the United States Department of Labor, and multiple Federal and State environmental agencies since 2005, and **despite** maintaining exemplary compliance records for both safety and environmental compliance for fifteen years, The Company was unable to responsibly maintain control of millions of gallons of acidic leach solution in March 2020. This placed the entire area at extreme risk of a toxic release which would have cost millions of dollars between clean-up and litigation settlements, as well as placing at risk the lives of untold humans, livestock, and wildlife. As a

consequence, The Division of Oil, Gas, and Mining revoked The Company's permit, and activated the surety bond. Following this near miss, The Company is now attempting to restart operations and to expand the facility, not from spending capital generated from profits, but rather using Federal funds earmarked for businesses affected by pandemic closures, even while remaining over \$2 million in arrears to San Juan County for property taxes dating back to 2014. To date, The Company has not issued a public statement of apology for placing workers, the general public, and the environment in harm's way. Given the history and ongoing status of financial insecurity, it is extremely unlikely that The Company will ever be able to maintain the health and safety of the workers, general public, or the environment.

< <https://www.sltrib.com/news/2020/03/24/san-juan-county-copper/> >

LVMC Claim: from < <https://www.sltrib.com/news/2020/01/02/copper-mine-san-juan/> >

"...(LVMC) company representatives noted the vast amounts of copper needed for renewable-energy projects, including wind and solar farms, make it likely that the Lisbon Valley Mine will continue to see extraction regardless of ownership."

Reality: *from < <https://www.usgs.gov/news/interior-releases-2018-s-final-list-35-mineralsdeemed-critical-us-national-security-and> >*

*Copper is **NOT** one of the thirty-five "Minerals Deemed Critical to U.S. National Security and the Economy" listed by the Department of the Interior. While it IS a component of many manufactured goods, including those involved with so-called "green" technology, the **mining** of copper, either by open pit or by in-situ recovery, is decidedly **NOT a "green" endeavor**.*

*Currently, **only 35%** of US copper consumption is supplied by recycling, even though **copper is 100% recyclable**. That figure is **50% in Europe**. Compared to open pit and in-situ mining, recycling is **the only** cost-effective and green method for producing copper. Expanding copper recycling is the low-hanging fruit. As described here:*

<<https://investingnews.com/daily/resource-investing/base-metals-investing/copperinvesting/the-economics-of-the-scrap-copper-market/>>

"...recycling copper requires 85 percent less energy than primary copper production at the mine level. On a global level, copper recycling reduces electrical energy use by 100 million MWh and keeps 40 million tonnes of carbon dioxide out of the atmosphere on an annual basis." It is very likely that LVMC's Solvent Extraction / Electrowinning facility (which was originally transported to Utah from Nevada) could be repurposed to support recycling operations, and even transported

again to a location more central to copper scrap sources. This strategy might actually represent truly “green” and economically viable alternative to extend LVMC as a going concern.

Conclusions:

- 1. Every single operation that has tried to mine copper out of Lisbon Valley for over 100 years has eventually gone broke. **It’s almost like there’s a curse.***
- 2. The only ones still in business are those that took a pass.*
- 3. Full cycle, the production cost of extracting copper from Lisbon Valley has ALWAYS exceeded the price of copper.*
- 4. For 15 years, LVMC has failed to demonstrate a sustainably profitable business.*
- 5. LVMC does **NOT** prioritize the health and safety of their workers, the general public, or the environment.*
- 6. LVMC has failed to demonstrated any worthiness to merit their requests, and instead has proven to be an ongoing financial burden to county, state, and federal tax payers.*
- 7. Mining copper by any technique is neither “green”, nor in any way critical to U.S. national security nor critical to either the national or local economy.*
- 8. The State is under **NO OBLIGATION** to sacrifice and donate forever the natural resource of an aquifer, which currently serves as a source of drinking water, just to satisfy LVMC’s desire to **experiment** in Lower Lisbon Valley extracting copper in a yet another novel and unprofitable manner.*

Submitted 01/10/2021 as public comment to Lisbon Valley Mining Company, LLC’s Burro Canyon

Aquifer Exemption request, and UIC Permit Number: UTU-37-AP-5D5F693

Comment 20: Division Response

See the Division’s responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. Additionally, the Draft Permit (DWQ 2020a) allows the Director to impose, on a case-by-case basis, additional conditions if later found to be necessary to prevent the migration of fluids into USDWs (DDWQ 2020a: Part III.M and 40 CFR § 144.52).

COMMENT 21: L LYNNE LEWIS, SAN JUAN COUNTY RESIDENT/FARMER, JANUARY 11, 2021

I am writing to you as a citizen and resident of the area of San Juan County that is in question for the Lisbon Valley Mine down by the La Sal area here in Southeastern Utah and the particular way of processing and obtaining copper that will definitely put a strain on the aquifers of this area and wells that are in the vicinity. I am referring to the in-situ mining process for Lower Lisbon Valley that the Lisbon Valley Mining company have applied for.

As you already know, water is one of the most precious commodities that we can have. Especially down here in our South Eastern desert of Utah. Especially for people that live here and their live styles such as ranchers etc.. I believe that copper is a great resource and is valuable but I believe that water is far more valuable. Why would you put people at risk, their lives, their homes?

Maybe, there could be a win win resolution or situation in which those that are mining for copper in this very devastating way could do the mining process differently than the proposed method that puts such a strain on our valuable resources. It works great for those who don't live here and extract out what they can then leave it for how many years to rebuild back to the environment that was previous. I know some mines are still recovering in the areas around here and I don't need to remind you what happened a couple years back with the Animas and San Juan rivers and how it's poisonous sludge from the mines effected many many people down stream on the Navajo nation. Their farms and water they drink ruined.

See this link - <https://www.hcn.org/issues/50.9/water-the-dark-secrets-of-the-Animas-River-Gold> This was from a mine close to Durango - Rico area, Colorado and that was a long time back from when the mine was operational. Look at the effects now and how much money it takes to clean it up? Why would we do this to people? It is devastating. It is hard enough to farm in the desert with good water? Because I am a farmer and rely on harvesting food from my garden I understand the needs for the best soil and water that can be available. Why should we give one person the right to ruin it for the money they make and make others suffer the consequences? Why can't it work in a way that works for the benefit for everyone. Meaning that there are better ways to mine or not at all if the effect will take away to much in the greater picture?

Why would you even consider to give a permit to hurt this area in this way? It has been ranching with cattle that feed many people for many years from this direct area. You are biting off the hand that is already feeding this state and already is a resource. How about tourism? I am sure that people who want to visit will need good drinking water? Is the value that comes from the copper really worth destroying a whole area that has minimal resources already and is the poorest county in the state, ruining it for all who inhabit the area? The question you may wish to ask is, would you want someone to do that to your drinking water? The long term effects could be disastrous for the whole ecology here for years? Again I think of the above situations and that is has been many years and maybe back then they did not know better from

deaths and statistics but today we should have enough wisdom from experience to know what the choice of destroying water resources means to others downstream.

This needs to be really thought out since water down here is a “real” issue! Many people down here live on a water system that is a well and tied to the aquifers that are available. We have drought systems down here that last longer with water having to travel great distances. Would you really compromise an area with so few aquifers that need years to be able to send water and distribute downstream? Many people here have to already use portable water have you done this? How far would we have to truck water with the effects of this decision? If it is the question of economy and income than look at Moab and the Colorado River? How much money has it taken to clean up that area and the discision pile? How many people ultimately lived downstream from the Colorado and who does it impact? The desert area of Lisbon may be smaller to you but I propose to you to carefully consider the weighed in consequences. How far does the chemical poison travel anyway if water goes ultimately into the ocean from rivers? We should look more at how can we make the aquifers survive? How to build up and utilize our natural resource in ways that do not tear down our living circumstances.

It has only been a couple of years ago in 2018 that most of the reservoirs down here Lloyd Lake for Monticello, Kens Lake in Moab were almost completely depleted by July when supplies needed to last until fall replenishment. Is it the intention of those thinking about this prospect to sicken those that are there in those areas? Surely you know the effects of challenging an already weak system for water and adding things that just do not go away to slowly go down stream.

And another question I have for you is that when this area is dry how much more money is going to go into fighting fires when the aquifers are not competent?

*We can live without a lot of things but **water is something that we cannot live without!** Do you agree? This letter is one of awareness and for consideration of the better good of all that live here that means **all**. Those who live in other areas would be effected by negative outcome because of cattle, because of wildlife because of plants and because of consciousness of effecting the very thing that keeps people alive - WATER! Many people visit here for the beauty of the land. You should consider areas like Shoshone and Wyoming and what happened when their water resources were tampered with. You have the ability and power held in your hands to protect and keep precious and valuable resources of life such as water protected. Or, milk out every drop of life and turn the land to waste? Or, is it possible to find something in the middle that is less destructive and yet will yield protection for water, people and lives and yet manage to build something up? **You can always choose to protect aquifers and not permit an exemption of quality?***

Chose wisely, as your decision effects lives, eco- systems, other resources such as cattle, seeds, plants and yes the future. This is a letter to aspire awareness and positive planning of future resources that keep

people and things alive. That everyone's choices have cause and effect and matter. I am only asking you to consider what this decision leads to in building the future but also to remember a good taste of water and all the life it creates!

I deeply appreciate the fact that you took the time to read this letter. My appreciation goes out to you for all you do to create better water of better quality that influences the quality of life of those around you and that you effect change for.

May we all make excellent choices for the future with the knowledge and awareness of lives that our choices effect.

Comment 21: Division Response

See the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished.

The Lisbon Valley UIC Class III Draft Permit was written to ensure that groundwater use by the applicant is in compliance with the SDWA UIC rules (Utah Administrative Code R317-7 et. seq. and federal regulations in 40 CFR incorporated by R317-7-1). The Division does not have the authority to regulate beyond the governing UIC statute and regulations, which do not consider financial or tax status, copper pricing, general community planning, or water rights. These issues are the responsibility of other jurisdictions. The governing statute and regulations do not allow the Division to prioritize certain community interests over others; rather, they require that the Director grant a UIC permit when the regulatory requirements are met.

Upon completion of in situ copper recovery, the Draft Permit (DWQ 2020a) requires that LVMC restore groundwater quality concurrently in the BC Aquifer and wellfield. The Group Comment Responses above are also responsive to this comment.

COMMENT 22: J. DAVID ROCCAFORT, LOWER LISBON VALLEY RESIDENT, JANUARY 8, 2021

For over 25 years, copper has been mined off and on (mostly off) from the open pit 4 miles northwest of our ranch and residences located in Lower Lisbon Valley. The mine has opened and closed, boomed and busted, and frankly, from our perspective they have mostly operated out of sight and out of mind. Over the years, they have submitted scores of applications for changes to their permit, relocation of their wells, updated their forms and reports, etc., to multiple administrative agencies. Not once had any one of us reviewed, challenged, or even really cared what they were doing.

We should have been paying closer attention. We respected LVMC's rights to act on the mineral claims they hold. We trusted them to work their end of Lisbon Valley, while we worked and lived on ours.

Then, starting a few years ago, every so often they'd send someone over, friendly enough, but the conversation always seemed to come around to discussing water. LVMC has known for years that both the well supplying the Wilcox ranch and the well supplying the 3 Step Bed & Breakfast were used for drinking water. At one point, they even offered to drill a deeper, more productive well between the two residences that we could use. Now, in retrospect, it is clear what they were up to. Once we realized they intended to expand their operations into Lower Lisbon Valley, we started to pay much closer attention to their recent filings, as well as to review all those documents they had submitted over the years. What we've seen is disgraceful.

The copper in Lower Lisbon Valley isn't commercially feasible to extract using an open pit. LVMC has been clear about that, which is why we've felt comfortable developing businesses and residences in the pristine Lower Valley. LVMC can't seem to maintain profitability at the open pit, so now they have their eye on the lesser-grade ore in Lower Lisbon Valley. But to get that copper out they believe in-situ recovery techniques (never before done for copper in UT) will work. In order to get the UIC permit approved, they need to obtain an aquifer exemption. In order to get the exemption, they need to demonstrate that there are no drinking wells in the area that are drawn from the same aquifer.

Imagine how elated they must have been to discover that the Wilcox well had never been permitted for domestic use, even though they knew it is currently serving as a source of drinking water. The only thing left between them and the exemption, they figured, was the Stevenson well. Their plan for that: draw the exemption boundary to just exclude that well, and claim that it is in the Navajo aquifer. Then, unrelated to Covid, LVMC ran out of money early in 2020, furloughed workers without pay, and nearly perpetrated what would have been one of the largest releases of toxic acid solution in the state. Their preoccupation with avoiding simultaneous bankruptcy and environmental catastrophe probably explains their lack of objection when the Wilcox's posted the notice filing their well for "Domestic Use" at the Division of Water Rights, which reconciled correctly the well's recorded use filed with the state, with it's actual use since 2014.

In March 2020, The Division of Oil, Gas, and Mining issued an unprecedented emergency order requiring LVMC to begin containment and reclamation efforts at their open pit operations "to the extent necessary to immediately prevent any imminent threat of environmental harm."

<https://www.sltrib.com/news/2020/03/24/san-juan-county-copper/>

A short time later, LVMC filed for and obtained money from the CARES act, and have since endeavored to restart the open pit, and now, to expand their operations into Lower Lisbon Valley.

We are not geologists, lawyers, bureaucrats, or politicians. We work hard and pay our taxes. We don't have experience in any of this, we haven't retained counsel or hired experts. So perhaps you can appreciate

the challenges, and hours it has taken us to review and assimilate decades of information, and to navigate the unfamiliar administrative processes to legitimately object to the LVMC aquifer exemption and in-situ UIC proposal in such a short period. We apologize in advance if the analysis we present is more detailed than necessary to make what is ultimately, a very simple point.

Fortunately, LVMC has done most of the work for us. They have submitted data clearly documented that the Wilcox domestic well, currently serving as a source of drinking water, is surrounded by the same aquifer they would like to contaminate. In the following pages, we review the LVMC data, integrate it with the relevant regulations, and outline why we conclude that their requests for aquifer exemption and a UIC permit should be denied.

We love Lower Lisbon Valley, and value it's unspoiled tranquility and serene beauty. We are thankful to be able to live and work here, and grateful for the clean drinking water that our wells provide. Our only interest and priority is to preserve and protect the aquifer we drink from, and trust that is the interest and priority of the Division of Water Quality as well.

Thank you in advance for your consideration,

The residents and landowners of Lower Lisbon Valley

Note: page references are to Lisbon Valley Mining Company (LVMC)'s Lower Lisbon Valley ISR Technical Report DWQ-2020-021046.pdf unless otherwise specified, all highlighting added.

The LVMC's lengthy and detailed UIC permit application and technical report represent a tremendous amount of effort on the part of the LVMC, and unfortunately, also for the Division of Water Quality. It would seem imperative to correctly establish early in the application process that the portion of the Burro Canyon aquifer targeted for pollution does not currently serve as a source of drinking water, as required by 40 CFR § 146.4, prior to spending time and money assessing the suitability of Lower Lisbon Valley for in-situ recovery (ISR). Certainly a careful and prudent company would perform appropriate due diligence regarding the existence of a domestic well used for drinking water in the same aquifer or portion of aquifer they were claiming for exemption. LVMC submitted the following material in a 3/5/2020 version of their UIC permit application, available at:

< <https://deg.utah.gov/businesses-facilities/lisbon-valley-mining-co-llc> >

3/5/2020 version (p68) "3.9 Rationale for the Aquifer Exemption Boundary

*The previous sections describe how the BC Aquifer is laterally and vertically bounded by aquitards and **geologic structures** in LLV. These structures **physically separate** the BC from **surrounding** USDW."*

3/5/2020 (p167) version of proposed Exemption Boundary and Aquifer Extent (state line added):

[Exhibit 1 of original pdf comment submittal]

3/5/2020 version (p86) description of East Boundary containment geology:

*“The **East Boundary is confined** in the following ways:*

- ***Geologic structure** which elevates the Burro Canyon formation above the piezometric surface, effectively pinching out the aquifer*
- *Dry holes drilled within Colorado*
- *Vertical confinement below the BC aquifer by impermeable shale.”*

*3/5/2020 version (p.30) below, locating existing wells and **original** East aquifer exemption boundary:*

[Exhibit 2 of original comment submittal]

*Current version (p.30) below, locating existing wells and the **new** East Aquifer exemption boundary:*

[Exhibit 3 of original comment submittal]

*According to the data submitted by LVMC in their current application, they continue to document that the **Burro Canyon Aquifer extends continuously the length of Lower Lisbon Valley up to the Utah - Colorado border**. Their current application for exemption, Figure 16.1 (p. 172) remains unchanged from the prior 3/5/2020 version (state line and Wilcox well added):*

[Exhibit 4 of original comment submittal]

*Failing to note the existence and location of the Wilcox domestic well (#05-3907), **which currently serves as a source of drinking water**, yet providing conclusive evidence that it is located in the same Burro Canyon Aquifer, LVMC anticipated that the Wilcox well would certainly disqualify the aquifer for exemption. Attempting to salvage this debacle, they simply moved the Eastern exemption border on their current application, and instead of requesting the exemption of the entire Burro Canyon Aquifer, they are now requesting exemption of only the more “convenient” western portion of it.*

*While the Eastern boundary of the **exemption area** request has now been moved $\frac{3}{4}$ mile to the west, placing the Wilcox domestic well head just outside the proposed “Project Area”, **the hydrogeologic rationale and documentation of the Eastern aquifer area boundary remain unchanged** from the 3/5/2020 version of their application, (p68):*

“3.9 Rationale for the Aquifer Exemption Boundary

*The previous sections describe how the BC Aquifer is laterally and vertically bounded by aquitards and **geologic structures** in LLV. These structures **physically separate** the BC from **surrounding USDW.**”*

and (p86):

*“The **East Boundary** is confined in the following ways:*

- ***Geologic structure** which elevates the Burro Canyon formation above the piezometric surface, effectively pinching out the aquifer*
- *Dry holes drilled within Colorado*
- *Vertical confinement below the BC aquifer by impermeable shale.”*

*Obviously, the hydrogeology of Lower Lisbon Valley has not changed in the 7 months between the two versions of Figure 3.2. Presuming that the extensive, detailed, and **identical hydrogeologic data** submitted by LVMC in **both versions** is correct in defining the Burro Canyon **Aquifer’s** Eastern border up to the Utah - Colorado state line, then LVMC has successfully demonstrated that the Wilcox domestic well (#05-3907) lies entirely within the Burro Canyon Aquifer.*

*Utah code offers some guidance in the delineation of a **portion** or **part** as separate from the **whole** in R317-6-5: <https://rules.utah.gov/publicat/code/r317/r317-006.htm#T5>*

*“C. Boundaries for class areas will be delineated so as to enclose distinct ground water classes as nearly as known facts permit. **Boundaries will be based on hydrogeologic properties...**”*

In addition, LVMC’s UIC Permit No UTU-37-AP-5D5F693 Draft, p. 21 (pdf p. 28) Part III, Section E. “REQUIREMENTS PRIOR TO IN-SITU COPPER RECOVERY...

1. Aquifer Exemption for USDWs and Aquifer Restoration Plan

- a) **Hydrologic data** documenting the presence or absence of a USDW(s);...”*

*And finally, 40 CFR § 144.7 - Identification of underground sources of drinking water and exempted aquifers, states: “(b) (1) The Director may identify (by narrative description, illustrations, maps, or other means) and describe in **geographic and/or geometric terms** (such as vertical and lateral limits and gradient) **which are clear and definite**, all aquifers or **parts** thereof which the Director proposes to designate as exempted...”*

Despite these directives, on several occasions the EPA has been strongly criticized for improperly approving applications where, “Aquifer exemption boundaries have been arbitrarily redrawn to satisfy regulatory criteria...”, as LVMC is attempting. The inappropriateness of those approvals are detailed starting on p. 38 of the “Citizen Petition to Repeal or Amend the EPA’s Aquifer Exemption Regulations to Protect Underground Sources of Drinking Water” available for review here:

< <https://www.epa.gov/petitions/citizen-petition-repeal-or-amend-epas-aquifer-exemption-regulations-protect-underground> >

*“EPA has also approved aquifer exemptions where applicants have modified spatial aquifer exemption boundaries by effectively **redrawing lines on paper to avoid private wells, without regard to aquifer geology** and without adequate changes to operational parameters to actually prevent contamination of the water supplies. This approach ignores basic hydrogeology and contaminant transport mechanisms, and EPA should revisit each instance where this has been done.”*

Nowhere in the relevant code is there a provision for one portion or part of an aquifer to be exempted which is not physically separate, remote, or contained, but rather contiguous with, and adjacent to another portion or part currently used as a source of drinking water, nor where the protection from contamination of the USDW is dependent solely on the strategy of differential pumping, rather than based on hydrogeologic properties.

*The data submitted by LVMC in their application fails to establish a clear and definite hydrogeologic boundary that separates the Wilcox domestic well (#05-3907), (which currently serves as a source of drinking water), from the portion of Burro Canyon Aquifer which they propose to exempt, pollute, and deplete. On the contrary, the hydrogeologic data they have presented **definitively establishes the Burro Canyon Aquifer as being in full continuity with and surrounding the Wilcox well (#05-3907)** “as nearly as known facts permit”.*

*Please note: in Table 3.3 on p. 81, LVMC lists a Wilcox well as located in the Dakota formation, but clarifies on p. 60, “For the purposes of this report, **reference to the BC aquifer is assumed to include the Dakota Sandstone.**”*

LVMC states in Section 3.8, Site Hydrology (p. 60-61) that

*“The **BC Aquifer**...in the Project Area... (is) lying at a depth of **200-900 feet below surface...**” and “In the Project Area... the **Navajo Aquifer..** lies at a depth of **800 to 2,200 feet below the surface.**”*

According to records on file at the UT Division of water rights:

The **Wilcox domestic well (#05-3907)** is located at a depth of **151 feet below the surface**, and

The **Stevenson domestic well (#05-2970)** is located at a depth of **220 feet below the surface**, which would appear to place them **both within the Burro Canyon Aquifer** and at least **580 feet above the Navajo Aquifer** according to LVMC's Site Hydrology-reported depth ranges.

The relative position of the domestic wells either within, or just outside the LVMC "Project Area" is immaterial, what matters from an **administrative** standpoint is that those domestic wells are located within the Area of Review, the intention of which is to consider the potential risk for any USDW's to be polluted inside the "Zone of endangering influence." What matters from a practical, environmental, water quality, resource protection, public health, and **precedent-setting** standpoint, is that the position of the Wilcox domestic well (#05-3907) is clearly within the same Burro Canyon Aquifer that the LVMC is proposing to exempt and pollute. "Alysen Tarrant, environmental manager for the Lisbon Valley Mining Co., said if the permits are approved, Lisbon Valley will be **the first place in Utah** to implement the ISR method. It will also be **the first time** it has been used to extract copper from a **sandstone-based** deposit since most recoverable copper deposits worldwide are found in harder rock layers." <https://www.sltrib.com/news/2020/01/02/copper-mine-san-juan/>

Over a longer-term time horizon, the benefits of having unspoiled land and water far outweigh the guaranteed long-term environmental harm imposed chasing the short-term mirage of in-situ copper profits. The mere presence of commercial ore is **NOT** an appropriate basis for exempting and contaminating **any** USDW **especially one** which **currently serves as a source of drinking water**. The above referenced "Citizen Petition" addresses this fallacy as well:

"Aquifers should not be exempted solely on the basis that they are mineral, hydrocarbon or geothermal energy producing... there is no statutory basis for the criteria in section 146.4(b)(1), which elevates the potential for production of minerals, hydrocarbons, or geothermal energy above EPA's duty to protect USDWs. To do so violates the Safe Drinking Water Act and unwisely prioritizes mineral and energy production above drinking water resources." (p 47).

The Burro Canyon Aquifer, and the portion requested for exemption meet the criteria for being an USDW as follows, per 40 CFR § 144.3, and R317-7-2:

It contains a sufficient quantity of ground water to supply a public water system (**true**); AND currently supplies drinking water for human consumption (**true**); or contains fewer than 10,000 mg/l total dissolved solids (**also true**); AND is not an exempted aquifer (**true**).

According to extensive testing data submitted by LVMC, the water quality in the Burro Canyon aquifer **varies considerably**. LVMC has **no BC aquifer test locations** anywhere near the Wilcox or Stevenson wells

in southeast Lower Lisbon Valley (locations of open pit & domestic wells currently serving as sources of drinking water have been added):

[Exhibit 5 of original comment submittal]

*Drinking water from the two current domestic wells in southeast Lower Lisbon Valley, one within the **original** LVMC “Project Area”, and both within the **current** Area of Review, consistently test significantly better than the results submitted by LVMC from their wells located nearby the mine’s open pit operations 4 miles to the northwest. Water quality from both the Stevenson and Wilcox domestic wells is comparable to water quality from nearby municipalities such as Moab, Monticello, and La Sal.*

When tested on 6/20/2017, LVMC’s Burro Canyon well (PW-9) furthest from the open pit, and nearest to the Wilcox well was within Utah drinking water standards for all parameters; TDS = 632 mg/L, Uranium = 0.0002 mg/L (Std < 0.03 mg/L), total Gross alpha = 4 pCi/l (Std <15 pCi/l), (Gross beta was not reported in currently accepted units of mrem/year). These results are significantly better quality than wells sampled closer to the open pit. The Stevenson and Wilcox wells, which are located even further from the open pit, both consistently meet Class II water quality standards.

MCLs are set at very stringent levels. “To suffer the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect”.

< <https://moabcity.org/DocumentCenter/View/2340/2018-Water-Quality-Report> >

For many reasons, it is very likely that in the future, even aquifers considered “poor” quality today will gladly be used for drinking water. Purification technologies’ costs and efficiencies are improving rapidly, demand for drinking-quality water is increasing exponentially, and aquifer contamination and depletion are ongoing as a consequence of prior mismanagement, climate change, and drought.

See: < <https://www.usgs.gov/news/groundwater-moab-area-less-previously-reported> >

ALL of LVMC’s own Burro Canyon aquifer wells originally included domestic use from 1996, (see attached application #A69971 for water right #05-2593) through 2004 (see attached application #T29010 for temporary change for water right #05-2593).

*On p.60, LVMC refers to the water in the Burro Canyon aquifer as “poor quality” but admits, that conclusion is based on samples obtained in 1998, and only from directly below the mine. One explanation is that mining activity in the area of the open pit had already contaminated samples drawn from that area. LVMC describes the BC aquifer as “...essentially comprised of a series of confined blocks with varying head pressures with no lateral gradient and **no connection with regional recharge**”, implying that it must derive*

its recharge from local surface water infiltration only, explaining the high variability in measured water quality from different wells, and the improving quality observed, the further southeast from the open pit the sample is taken. Given the disconnect from regional flow gradients, the injection of any contaminants into the BC aquifer would be expected to eventually diffuse and disperse throughout the aquifer, and without significant regional recharge, the necessary volumes withdrawn for ISR and lost to evaporation present significant risk for dewatering, especially during periods of drought. It is worth noting that in section 6.3, LVMC states explicitly that, **“The BC aquifer may not contain enough water supply to support the ISR project since it does not recharge or have influent flow.”** Their proposed solution to that anticipated tragedy is to simply draw the water needed from the Navajo aquifer below.

The classification of “poor-quality” appears **nowhere** in the definition of an USDW. Even groundwater of Class III quality (Limited Use) is afforded protection as an USDW under the SDWA, and UT code R317-6-4.

<https://rules.utah.gov/publicat/code/r317/r317-006.htm#T4> >

“4.6 CLASS III PROTECTION LEVELS

A. Class III ground water will be protected as a potential source of drinking water, after substantial treatment, and as a source of water for industry and agriculture.”

We residents in Lower Lisbon Valley have tested our drinking water drawn from our Burro Canyon Aquifer domestic wells, and based on the results, are completely comfortable drinking it **untreated**, daily. Additionally, the Wilcox well serves **agricultural** uses for livestock and irrigation.

The basis of successful copper ISR is predicated on lixiviant migrating freely within the injected aquifer. Given that the originally proposed Aquifer Exemption and “Project Area” extends east **beyond** the Wilcox domestic well (#05-3907), coupled with the hydrogeologic study data LVMC submitted documenting the favorable **sandstone** porosity and continuity, it is fair to conclude that **groundwater freely moves within the boundaries of the entire Burro Canyon aquifer** as currently defined by LVMC (figure 16.1 above) and within their originally proposed exemption area surrounding the Wilcox domestic well (#05-3907).

Per Utah code, R317-7-5. Prohibition of Unauthorized Injection.

<https://rules.utah.gov/publicat/code/r317/r317-007.htm#T6> >

“5.3 Underground injections are prohibited which would allow movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation (40 C.F.R. Part 141 and Utah Primary Drinking Water Standards R309-200-5), or which may **adversely affect the health of persons.**”

*Clearly, sulfuric acid, which even at dilute concentrations of 0.5% is classified as a highly corrosive, fully-dissociating **strong acid** with a pH of 1, is a fluid which if injected into an aquifer that is currently serving as a source of drinking water “may adversely affect the health of persons”. Sulfuric acid is in no way comparable to vinegar, or to any other partly-dissociating weak acid. Beyond the direct corrosive effects of the sulfuric acid itself, it will also dissolve and mobilize radionuclides and other heavy metals besides copper. The consequences of these collateral hazardous substances have been well described and documented by the EPA.*

<https://www.epa.gov/radiation/tenorm-copper-mining-and-production-wastes>.

In fact, the lixiviant used for in-situ copper leaching is comparable to that used for in-situ uranium production, the difference being only which element is harvested from the pregnant leach solution. A strong argument could be made that given the propensity for the sulfuric acid lixiviant to mobilize radioactive substances, that the process of in-situ copper mining should be held to the much more stringent permitting requirements which uranium extraction must follow.

Regarding specifically LVMC’s permit application “Section 16.0 Part N – Aquifer Exemption” beginning on p. 168,

“16.1 Introduction

40 CFR § 146.4 allows EPA to exempt an aquifer or portion of an aquifer for the purpose of injection provided:

*(a) It does **not** currently serve as a source of drinking water; and...”*

*and... **FULL STOP.** LVMC’s **own data** defines the **hydrogeologic** boundary of the Burro Canyon aquifer’s eastern border to be at the Utah - Colorado state line. **None** of their data even attempts to demonstrate any natural hydrogeologic, flow-gradient, or capture zone separation between the portion they are **now** requesting for exemption, and the Wilcox domestic well (#05-3907) which draws from the **same** Burro Canyon aquifer. The Wilcox well **currently serves as a source of drinking water, and has since 2014.***

p. 169

“16.2 Aquifer Serving as a Source of Drinking Water

*Question: Does **the aquifer** serve as a source of drinking water?*

Answer: No.”

Correction: Answer: YES.

LVMC: “There are no domestic water wells in the Project Area.”

Reply: That WAS NOT the question.

It is unfortunate that LVMC’s pursuit of a copper ISR permit in Lower Lisbon Valley has wasted so much of their own time, energy, and resources, also those of the DWQ, and now has burdened the public as well, especially when the non-eligibility for exemption of the Burro Canyon Aquifer could have been identified so simply.

Aquifer exemptions are effectively permanent and forever. Once exempted, the underground water ceases to be categorized as a source, or potential source of drinking water, and as a consequence no longer qualifies for protection under the SDWA. Once exempted, LVMC will contaminate the Burro Canyon Aquifer, and there is no real purpose to remediation at that point. There are no “do overs” and no going back.

*In conclusion, the **portion** of Burro Canyon Aquifer requested for exemption by LVMC is **hydrogeologically** in continuity with the **entirety** of the BC aquifer underlying Lower Lisbon Valley. Hydrogeologic data submitted by LVMC suggests that injected lixiviant is expected to move freely throughout the entire **sandstone** aquifer, and that the eastern exemption area border was moved west solely to intentionally exclude the Wilcox well (#05-3907) from the exempted area. The Burro Canyon Aquifer meets the criteria as an Underground Source of Drinking Water **and contains** at least one domestic well (#05-3907) that **currently serves as a source of drinking water**, thus the underground injection of contaminants is prohibited, and protection of the aquifer from endangerment is mandated under both the Safe Drinking Water Act and existing Utah regulations, and **the entire Burro Canyon Aquifer is disqualified from exemption**. As a consequence, the LVMC aquifer exemption and UIC permit request **must be denied**.*

Submitted 01/10/2021 as public comment to Lisbon Valley Mining Company, LLC’s Burro Canyon Aquifer Exemption request, and UIC Permit Number: UTU-37-AP-5D5F693

Mike and Joan Wilcox

Julie and Scott Stevenson

RL Wilcox

Francine Osikowicz

J. David Roccaforte

Attachments (2) (“Domestic Use” highlighting added)

[Exhibits 6 and 7 of original comment]

Comment 22: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, which do not consider the financial or tax status of the applicant. These issues are the responsibility of other jurisdictions as explained in the Division's responses to Group Comments above.

See the Division's response to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. UIC regulations allow the exemption of aquifers or portions thereof, and portions of aquifers can be delineated based on geologic, hydrologic, or institutional control criteria (see Group Comment Response 10). As the commenter notes, there is precedent for the delineation of Aquifer Exemption boundaries drawn for regulatory purposes based on natural land and geologic features and boundaries. The BC Aquifer Exemption volume boundary on the east side does not include the Wilcox well. According to the Draft Permit conditions, maintaining water quality at this boundary will be accomplished using institutional controls as defined in Draft Permit conditions Parts III.G, III.H, III.J, and Attachments F and H (DWQ 2020a). The Aquifer Exemption volume delineated in the Draft Permit places the Wilcox well outside the Aquifer Exemption volume. However, because the Wilcox well is within the area of review, the Division considered the potential risks to water quality in that well from in situ copper recovery operations. UIC well permit applications require the disclosure of only artificial penetration (i.e., well) locations in the area of review (R317-7-9.1(D)(10); 40 CFR § 146.34(a)(3)) and not water rights. A given well can be a point of diversion for multiple water rights. Therefore, the LVMC UIC permit application was complete without explicitly calling out water right 05-3907 for the Wilcox well or any other water right within the area of review per the Division's application requirements for UIC Class III area permits for in situ copper recovery.

The Stevenson domestic well (water right #05-2970) is located at a depth of 220 feet below the surface, but it is on the footwall or southwest side of the graben normal fault, which puts the bottom of the well in the Navajo Aquifer (LVMC 2020: Figure 3-26). Furthermore, the potentiometric surface in the Navajo Aquifer at this well is at a higher elevation than the BC Aquifer on the hanging wall or northeast side of the fault, and groundwater flows away from the Stevenson well north and east into Lisbon Valley such that leach solutions in the BC Aquifer cannot migrate toward the well. In other words, there is a natural hydraulic barrier protecting this well in addition to the Draft Permit conditions that require technological containment of leach solutions and monitoring to ensure the natural controls are functioning as expected.

While not as well known or common as conventional mining with open pit or underground excavation, in situ copper and other mineral resource recovery is allowed under the UIC program. Several research, pilot, and commercial in situ copper recovery projects, like the Florence and Gunnison Copper Projects in

Arizona permitted under UIC regulations by the EPA have been successfully completed in the United States in the past decade and have contained and treated leach solutions within the designated project areas.

Following in situ copper recovery, the Draft Permit (DWQ 2020a) requires that LVMC restore groundwater quality concurrently in that volume of the BC Aquifer and in the wellfield once copper recovery is complete. Requirements in the Draft Permit for purposes other than in situ copper recovery include monitoring and balanced injection and recovery within wellfields and excess production of water at the perimeter to maintain a hydraulic gradient that results in flow of surrounding groundwater into the wellfield, thereby preventing any leach solution from flowing outside the capture zone.

COMMENT 23: RL WILCOX, PRIVATE CITIZEN, JANUARY 10, 2021

Thank you for the opportunity for public comment regarding LVMC's permit application for underground injection of sulfuric acid into my family's drinking water. It is obvious that LVMC did not provide the Division of Water Quality with all the necessary information to make a wise decision on such an important matter. My comments will focus on the facts that exist beyond what LVCM has provided.

We have two different water rights on the same well within the Burro Canyon aquifer. Water right 05-3907 is our domestic, irrigation, and livestock watering right that reflects our use of water at my parents' home and our livestock handling facilities. We use the water for domestic drinking and watering our livestock 365 days a year. My mom also uses the water for a small greenhouse and lawn. Water right 05-3575 is for 400 head of livestock for five months of the year. Our mother cows are in Lower Lisbon Valley during these months to give birth. These pregnant cows and new born calves need an abundant supply of water during calving season to ensure good health. Our use of water from the Burro Canyon aquifer sustains our lives and our livelihood in Lower Lisbon Valley.

On Appendix D- Well Inventory Summary Tables- Table 2- Other Wells within the AE boundary, provided by LVMC, it only lists our livestock right. This is a major oversight. The Burro Canyon aquifer not only supplies water for our livestock but is our source for domestic drinking.

Given the fact that the Burro Canyon aquifer does indeed serve as a source of drinking water, requirements for exemption cannot be met. Furthermore, Utah as a whole is experiencing record growth. Property values in San Juan and Grand Counties continue to grow. Just to the south of the copper mine, on top of three step hill, a subdivision exists with people from all over the country moving in and they are drilling wells for domestic drinking. A new subdivision in La Sal is currently under construction. The water source will be underground wells. Moab valley continues to grow toward Lisbon Valley. The need for drinking water in San Juan County grows every day. The Burro Canyon aquifer could easily become a source of drinking water

for many people. Therefore, the Director shall protect it from exemption as required in 40 CFR 144.7 and 40 CFR 146.4.

My family owns approximately 900 acres of land in Lower Lisbon Valley that sits on top of the Burro Canyon Aquifer. We also own the grazing allotment on surrounding BLM and SITLA land. This is not just recreational property for my family, this is where we live and operate a business. In-situ mining and an aquifer exemption within the Burro Canyon aquifer will devalue our property substantially. Our grazing permit will be ruined. Generations of hard work will be gone forever. We have established our water rights through the State of Utah Division of Water rights and these rights must be protected. LVMC can not infringe on those rights in any way.

LVMC has gone to great lengths in the permit application to attempt to prove that they will not contaminate the Navajo Aquifer, even though it is hydrologically connected to the Burro Canyon Aquifer. They have provided no evidence of any kind that they will not contaminate the water in our well and infringe on the water rights that we have established. There is no fault, aquitard, or any kind of barrier between the proposed injection wells and our source of drinking water.

Though monitoring the aquifer while injecting acid into it is necessary, it gives us little comfort. If the monitoring system detects contaminants, it is too late. Our water will be ruined. If the In-situ process dewateres our well, our livelihood is in serious jeopardy. The Division of Water Quality must protect our drinking water by not allowing LVMC to inject any chemicals into our drinking water.

On December 2nd 2020 I submitted questions to the Division of Water Quality in regards to this application and aquifer exemption. I have not received any response. The Division of Water Quality should make it a priority to have an open dialog with the public, especially during the public comment period. The fact that I have received no response to my questions leaves me very frustrated. The Division of Water Quality should not leave it to the public to find all of the false information, lack of information, and shady practices provided by LVMC. When the Division of Water Quality was made aware of our domestic drinking right, the application should have been denied.

Current and past financial responsibility should be considered as part of this permitting process. LVMC and copper mines in general in Lisbon Valley have a very poor financial history. They currently owe San Juan County over \$2 million in property taxes. LVMC can not be trusted with this complicated In-situ process.

LVMC has no interest in the environment or a long-term outlook. They want to take as much as they can, as cheap, easy, and as fast as they can. When they have taken all that mother nature has given them, LVMC will be gone and they will leave a mess for us to deal with. My family lives with and depends on the environment as a whole. We can not take more than we put back. We are not in it for any short-term gain or profit. We are in Lower Lisbon because our family loves the land and wants it to be here for many

generations to come. The Division of Water Quality can not let LVMC destroy what we have worked so hard to improve and leave for future generations. The Burro Canyon aquifer does not belong to anyone. It is part of the earth. No one, not LVMC, DWQ, or the Wilcox family has the right to contaminate and destroy it. We all must respectfully keep it whole and clean for the Greater Good. We all suffer if a non-renewable resource is destroyed.

Thank you for your consideration of this very important matter. I am requesting a written response to these comments and want to be included on all future correspondence as an affected public.

Comment 23: Division Response

Many of the concerns expressed are addressed in the Group Comments portion of this Response Document in Section II, and Specific Comments have been addressed in the Division's responses to Comments 12, 13, and 24 received previously from Mr. Wilcox. The Division does not have the authority to regulate beyond the governing UIC statute and regulations and does not consider water rights or the financial or tax status of the applicant in its determination. These issues are the responsibility of other jurisdictions and permits.

See the Division's responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished. UIC well permit applications require the disclosure of only artificial penetration (i.e., well) locations in the area of review (R317-7-9.1(D)(10); 40 CFR § 146.34(a)(3)) and not water rights. A given well can be a point of diversion for multiple water rights. Therefore, the LVMC UIC permit application was complete without explicitly calling out water right 05-3907 for the Wilcox well or any other water right within the area of review per the Division's application requirements for UIC Class III area permits for in situ copper recovery.

COMMENT 24: STEVE DEETER, PRIVATE CITIZENS, JANUARY 12, 2021

I was impressed with several of the comments made during the Dec. meeting. I know that personal feelings have little weight in this manner, but I do feel for the Wilcox and Stevenson families. However, my comments will not address those feelings.

My first objection to the proposed procedure is based on the false statement that the Aquifer exemptions have been met in that no private wells will be affected. The above wells mentioned are within 3 miles of proposed procedure.

At the Florence, AZ situ recovery, Dan Johnson, VP and GM claims each well is anchored in bedrock by acid resistant cement. The wells are sealed by two different casings, one steel the fiberglass. Here is his claim, quote "We're protecting the above ground zones, the water bearing zones we are penetrating to get to the bedrock." It is my understanding that situ at the Lisbon Valley Copper mine will be using the Burro

Canyon aquifer. My question is where is the protection? There are no 100% guarantees and everyone knows that including the DEQ.

Lisbon Valley is nothing but faults upon faults. What guarantee can Lisbon Valley mine give that this will not contaminate the aquifer or aquifers below that? What will stop the acid from following a fault to a lower aquifer, the Navajo sandstone aquifer for example? None. If the situ acid does start following the burro canyon aquifer towards the private wells what is going to stop it from going onto springs that seep from this aquifer in Grassy Hills Grazing Allotment below and then drain into the Delores River?

To quote Barbara Manning of Florence, AZ. "Copper, yes it will be profitable for somebody, but water in the desert is Gold," Unquote.

San Juan county commissioners have made their statement against this and I stand with them.

Comment 24: Division Response

See the Division's responses in this document to the Wilcox and Stevenson families. Also see responses to Group Comment 8 and Group Comment 2 indicating that the Aquifer Exemption Request and Financial Assurance information will be amended for clarity and republished.

With respect to well casings and mechanical integrity, the Draft Permit requires rigorous well construction design, methods, and materials (including acid-resistant cement), as well as periodic mechanical integrity testing to protect the surface environment and subsurface aquifers (for details, see DWQ 2020a: III.D, III.I, Attachment D, and Attachment F). Injection and recovery wells will be operated within design tolerances as specified in the Draft Permit (for details, see DWQ 2020a: III.F and Attachment D). Wells that are no longer in service will be plugged to protect aquifers as detailed in the Draft Permit (for details, see DWQ 2020a: III.K and Attachment I). Natural geologic barriers and the wellfield operating conditions specified in Part III.F and Attachment E will contain all leach solutions within the permit boundaries and aquifer exemption zone (DWQ 2020a: III.F and Attachment E). Groundwater monitoring at the point of compliance (DWQ 2020a: III.G and Attachment F) and contingency plans (DWQ 2020a: III.C and Attachment G) are detailed in the Draft Permit and will ensure that no solutions will be allowed to migrate to the Dolores River. The Draft Permit also requires monitoring, injection, and recovery wells to protect water resources during and after ISR.

**COMMENT 25: SARAH FIELDS, PROGRAM DIRECTOR FOR URANIUM WATCH, JANUARY 15, 2021;
CARLY FERRO, DIRECTOR, UTAH CHAPTER, SIERRA CLUB, JANUARY 15, 2021**

Comment 25.1

1. Request for "Aquifer Exemption" Public Comment Period and Public Hearing

1.1. The Division did not make clear the process for obtaining an Aquifer Exemption and Environmental Protection Agency Regulations requirement for a public comment period and public hearing on Aquifer Exemption Requests. There was no proper Public Notice of an opportunity provide written and oral comments on a LVMC Aquifer Exemption Request.

Comment 25.1: Division Response

See the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.2

1.2 The heading for the Public Notices of November 4 and December 1, 2020, states: “Public Notice of Intent to Issue Permit Underground Injection Control Class III Area Permit In Situ Copper Recovery.” The Notices state regarding the Purpose of Public Notice: “The Utah Department of Environmental Quality (DEQ) is soliciting comments on the request to authorize a new Underground Injection Control (UIC) Class III permit as described below.” The Notices do not state that the Purpose of the Public Notice is to obtain comments on an Aquifer Exemption Request.

Comment 25.2: Division Response

The Permit Information section of the Public Notice discloses that the Draft Permit and Aquifer Exemption are the subjects of public comment.

Comment 25.3

1.3 The heading for the November 19, 2020, Notice states: “Notice Public Hearing on Draft Permit Underground Injection Control Class III Area Draft Permit.” The Notice states regarding the Purpose of the Public Hearing: “The Utah Department of Environmental Quality (DEQ) is soliciting comments on the request to authorize a new Underground Injection Control (UIC) Class III area permit as described below.” The Notices do not state that the Purpose of the Public Hearing is to obtain comments on an Aquifer Exemption Request.

Comment 25.3: Division Response

The Permit Information section of the Public Notice discloses that the Draft Permit and Aquifer Exemption are the subjects of public comment.

Comment 25.4

1.4 The Division “Statement of Basis and Fact Sheet” is for an “Underground Injection and Control (UIC) Class III Draft Area Permit.” The “Statement of Basis and Fact Sheet” is not for an Aquifer Exemption Request. The Statement of Basis and Fact Sheet provides little information about an Aquifer Exemption Request. The Fact Sheet statement regarding an “Aquifer Exemption Request” gives the impression that the aquifer exemption is subject to Environmental Protection Agency (EPA) approval and an EPA public notice and comment process:

Lisbon Valley is seeking an Aquifer Exemption for the Burro Canyon Aquifer beneath the permit area (Figure 1) according to R317-7- 4 and the Division has identified aquifers that may be exempted as sources of underground drinking water following the procedures and based on the requirements outlined in 40 CFR 144.7 and 40 CFR 146.4. The exemption is subject to approval by the Environmental Protection Agency (EPA) UIC Program Administrator following public notice and comment.

The Statement of Basis and Fact Sheet does not provide any substantive information regarding the Aquifer to be exempted and the basis for such an exemption. The Fact Sheet states that “the Division has identified aquifers that may be exempted,” but does not provide any information about the aquifers it may exempt.

Comment 25.4: Division Response

See the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

According to 40 C.F.R. § 124.8, the fact sheet shall include, when applicable (inapplicable provisions removed from the text below):

- (1) A brief description of the type of facility or activity which is the subject of the draft permit;
- (2) The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged;
- (4) A brief summary of the basis for the Draft Permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record required by § 124.9 (for EPA-issued permits);
- (5) Reasons why any requested variances or alternatives to required standards do or do not appear justified;
- (6) A description of the procedures for reaching a final decision on the Draft Permit including:

- (i) The beginning and ending dates of the comment period under § 124.10 and the address where comments will be received;
 - (ii) Procedures for requesting a hearing and the nature of that hearing; and
 - (iii) Any other procedures by which the public may participate in the final decision; and
- (7) Name and telephone number of a person to contact for additional information.

The FSSOB included all applicable elements required by 40 CFR § 124.8. The CFR does not require that the fact sheet repeat all substantive information included in the Draft Permit. Rather, it requires brief summaries of the content to be covered in detail by the Draft Permit, which the Division included with respect to the Aquifer Exemption Request. Specifically, the FSSOB states:

Lisbon Valley is seeking an Aquifer Exemption for the Burro Canyon Aquifer beneath the permit area (Figure 1) according to R317-7-4 and the Division has identified aquifers that may be exempted as sources of underground drinking water following the procedures and based on the requirements outlined in [40 CFR 144.7](#) and [40 CFR 146.4](#). The exemption is subject to approval by the Environmental Protection Agency (EPA) UIC Program Administrator following public notice and comment. Public comments received by the Division will be considered and changes may be incorporated into the exemption request record submitted to the EPA. (DWQ 2020b: 4)

Figure 1 in the FSSOB shows the permit area, and the aquifer exemption volume is defined as the Burro Canyon Aquifer below the permit area in the FSSOB.

Comment 25.5

1.5 The Application documents posted on the Division Public Notice website¹ contain maps and figures showing two (2) completely different Aquifer Exemption Boundaries. The Technical Report Attachments zip file contains other zip files, one of which is LVMC Technical Report Figures, which opens to a file of the ISR Maps and Figures. All of the maps and figures in this file show an Aquifer Exemption Boundary that extends east to the Utah/Colorado border.

The September 29, 2020, LLV Technical Report figures and maps show a completely different, smaller, Aquifer Exemption Boundary, except for one Figure. Figure 16.1 (page 172), Geologic Structure and Aquifer Extent, shows the Burro Canyon Aquifer and Aquifer Exemption Boundary extending to the Utah/Colorado border.

¹ <https://deq.utah.gov/public-notices-archive/water-quality-public-notices#lvm>

The Figures in the September 2020 LLV Technical Report also contain different information related to the Wilcox Well 05-3907/05-3575, which is within the Aquifer Exemption Boundary on the Technical Report Attachments maps and figures, but outside of the Boundary shown in maps and figures within the September 2020 LLV Technical Report.

Comment 25.5: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

The Division maintains here and throughout the Division's response that the Technical Report is not the permit, and that LVMC was required to provide information so that the Division could review the application and write the Draft Permit. The Technical Report itself is not part of the Draft Permit, and different versions were produced as the permit review was conducted in order to supply additional information and modify LVMC plans accordingly. The Draft Permit is the legal regulatory document that defines all permit conditions. The objective of the Division's review of LVMC's application and Technical Report is not to edit and finalize them, but rather to use them for the Draft Permit document, which is the subject of this public notice and is available for public comment. The proposed Aquifer Exemption boundary in the Draft Permit is more limited than that in the Technical Report because it was reviewed and approved by the Division after considering all information supplied with the permit application, the Technical Report, and revisions thereof. Permit review is a process, and the applicant can choose to change certain aspects of its request, including the project area and Aquifer Exemption Request, based on feedback from the Division or as a result of changes in other factors and decisions by the applicant after filing its initial application and prior to the Division's decision to issue the Draft Permit for public notice. Any other versions that have been submitted by LVMC in their permit application materials and Aquifer Exemption Request are not available for public comment with respect to the Draft Permit and Aquifer Exemption. The Technical Report is not part of the Draft Permit but does supply information for development of conditions.

Comment 25.6

1.6 In Sum: 1) the Application documents posted on the DWQ Public Notice webpage show 2 completely different Aquifer Exemption Boundaries; 2) The Division failed to notice an opportunity for public comment on an Aquifer Exemption Request; 3) the Division failed to provide for a public hearing on an Aquifer Exemption Request; and 4) The Division did not provide any bases for granting an Aquifer Exemption, with reference to the applicable aquifer exemption requirements and the administrative record. Therefore, the Division must clarify the Aquifer Exemption Boundary that is being requested and the basis for that Boundary, and provide Proper Public Notice of an opportunity for a public comment period and a public hearing on the LVMC Aquifer Exemption Request.

Comment 25.6: Division Response

The Division has responded to these comments in its responses to Uranium Watch/Sierra Club comments 25.1 through 25.5.

Comment 25.7

2. General Comments

2.a At the beginning of the comment period the Division failed to make the full LVMC UIC Permit application available to the public on the Public Notice website.² Nor was the full application available at the time of the public hearing held on November 24, 2020. It was not until after the public hearing that what appears to be the UIC Permit Application was posted on the DWQ public notice webpage. The Division, therefore, failed to make the full Application available to the public in a timely manner.

Comment 25.7: Division Response

Under R317-7-13 and 40 CFR § 124.10 there is no requirement for the Division to post the full application with the Draft Permit and FSSOB. The Division posted the full LVMC UIC Class III Permit Application in response to Uranium Watch / Sierra Club's (UWSC's) e-mail request on November 24, 2020, and GRAMA request on November 25, 2020. This was completed on December 8, 2020, within the ten-day period prescribed by GRAMA. For this reason, the Division provided the full application, despite the fact that the pertinent regulations do not require the full UIC permit application to be available or included in the original public notice.

Comment 25.8

2.2 Although the Division posted some of the Application documents, the Division has not identified which documents are part of the Application under review by the DWQ. There are different Figures and Maps that have been included as part of the Application on the Division website. There is no document issued by the DWQ stating that the Application is complete. The Division should have provided a full list of the Application Documents, but did not. The Division should have created a separate LVMC Application webpage with links to each separate document and a list of all of the relevant application documents, including identification of original documents and subsequent revisions. It is not appropriate just to post large files, which contain zip files within zip files within zip files.

² <https://deq.utah.gov/public-notices-archive/water-quality-public-notices#lvm>

Comment 25.8: Division Response

The Draft Permit (DWQ 2020a) identifies the facts, figures, and documents that were relied on in the Director’s permit decision and will apply specific conditions to operations if the permit is finalized. The Division provided application documents that were reviewed by the Division in response to UWSC’s request, but not all application documents are incorporated in the Draft Permit. Some documents that were not incorporated into the Draft Permit were added to the Division’s website because UWSC requested more information. The Division is not bound by the original application materials submitted. Rather, the Division can request revisions to the application materials as submitted where necessary and use updated materials in the Draft Permit.

The Division reviewed all application documents including original and revised application materials, which when combined in electronic form are over 200 MB. To provide this information in a timely manner, the Division created zip files and posted the files electronically. Division staff members were available to provide information to any members of the public requiring assistance in obtaining and opening and reviewing the documents.

Comment 25.9

2.3 The Division recently posted a new document to the Lisbon Valley Mining Co., LLC, public notice documents. This is “ISR Figure 3.1 Area of Review.”³ It is very hard to tell the date of this document, but, apparently, it is dated June 24, 2020. This is not the same Figure 3.1, dated November 12, 2019,⁴ that was referenced in the LVMC September 29, 2020, Class III Underground Injection Control Permit Application. It is not the same Figure 3.1 that was included in the Technical Report Figures/ISR Maps and Figures that are part of the Technical Report Attachments posted on the DWQ Public Notice webpage. It is not appropriate for the Division to add a new, and very different, document to the administrative record to replace an earlier document—without explanation—at the last minute.

Comment 25.9: Division Response

The Division provided all application materials on its website (now in the public notices archive <https://deq.utah.gov/water-quality/lisbon-valley-mining-co-llc>) based on requests from UWSC and other members of the public. However, these additional documents provided later do not constitute part of the Draft Permit public notice package.

³ <https://documents.deq.utah.gov/water-quality/facilities/lisbon-valley-copper/DWQ-2021-000064.pdf>

⁴ https://uraniumwatch.org/lisbonvalleymine/LVMC_UIC_TechReport_Map_Figure3.1_AreaoReview.png

Comment 25.10

2.4 At the November 24 hearing and in a subsequent letter to the DWQ, UW requested a 60-day extension of the comment period suspense date of December 4, 2020. The extension request was based on the lack of availability of pertinent UIC Permit Application records, the complexity of the Application, and the winter holidays. The Division provided a 38-day extension of the comment period. While UW appreciates the extension, there was no basis for not providing a full 60-day extension. This project will take more than 2 years to fully permit. There is no need to rush this process.

Comment 25.10: Division Response

A 30-day comment period is standard, and the additional 30 days were provided voluntarily based on public comment. The extra 8 days were provided to accommodate the holiday season, and this extension was appropriate based on comments received during the extension period. The decision whether to provide an extension and the length of an extension are discretionary. There is no legal requirement to provide a 60-day extension. There will be an additional 30-day public comment period when the updated Aquifer Exemption Request and Financial Assurance are released for public comment.

Comment 25.11

3. Statement of Basis and Fact Sheet

3.1 As part of their response to the Class III UIC Permit Application, the Division produced a 4-page "Statement of Basis and Fact Sheet for a [sic] Underground Injection and Control (UIC) Class Draft Area Permit," dated November 4, 2020. The Fact Sheet contains a very brief description of the type of facility, a brief description of the In-Situ Copper Recovery injectate, a brief discussion of Permit Conditions and some references, and a mention of the Aquifer Exemption Request to the Environmental Protection Agency (EPA). The Fact Sheet is not adequate and does not meet EPA requirements, as will be discussed below.

3.2. EPA regulation applicable to UIC Permits and State Programs, such as the DWQ regulation of UIC Permits, are found at 40 C.F.R. Part 124. Section 124.8 provides the requirements for a UIC Permit fact sheet:

b) The fact sheet shall include, when applicable:

(1) A brief description of the type of facility or activity which is the subject of the draft permit;

(2) The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.

- (4) *A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record required by §124.9 (for EPA-issued permits);*
- (5) *Reasons why any requested variances or alternatives to required standards do or do not appear justified;*
- (6) *A description of the procedures for reaching a final decision on the draft permit including:*
 - (i) *The beginning and ending dates of the comment period under §124.10 and the address where comments will be received;*
 - (ii) *Procedures for requesting a hearing and the nature of that hearing; and*
 - (iii) *Any other procedures by which the public may participate in the final decision.*
- (7) *Name and telephone number of a person to contact for additional information.*

Clearly, the DWQ Fact Sheet does not meet these EPA requirements.

Comment 25.11: Division Response

The Division provided all of this information in the Public Notice and FSSOB documents, as described in detail in the subsequent responses.

Comment 25.12

3.3 The Fact Sheet is supposed to provide a brief description of the type of facility or activity which is the subject of the draft permit. The description of the type of activity is minimal. The map provides no information about the number and location of ISL-related wells, location of ore bodies, location of wells used for domestic and agricultural purposes, surface impacts, and other relevant information.

Comment 25.12: Division Response

The LVMC FSSOB (DWQ 2020b) meets all of the requirements for the proposed facility per 40 CFR § 124.8 by providing brief descriptions of the facility and activities. Detailed descriptions of the facility, construction and operating plans, and locations of operations, ore bodies, and wells are included in the Draft Permit itself (DWQ 2020a) and are not required to be included at length in the FSSOB.

Comment 25.13

3.4 A Fact Sheet should include a description of “the type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.” The Division’s Fact Sheet does not meet this requirement. There is only a mention of the fluids that will be injected. The chemical constituents and nature of the injectate is not included. There is no description of the type and quantity of wastes, fluids, and pollutants that will be treated, stored, disposed of, injected, emitted, or discharged. There is no description of the project as a whole. There is no analysis of the uranium and other potential radionuclides that will be mobilized by the injectate and how those radioactive contaminants will be removed from the final copper product. There is no analysis of the extent and amount of radon emissions from the project, which is similar to uranium recovery ISL operations in Wyoming that emit radon. There is no mention of the disposal of wastes in a proposed Class V UIC well or possible land application of these wastes.

Comment 25.13: Division Response

The FSSOB is meant to be an overview of the project and its components and does not require more than “a mention” to meet the requirements of 40 CFR § 124.8. The more detailed information is outlined in the Draft Permit (DWQ 2020a). Specifically, the Draft Permit requires monitoring and reporting of the chemistry and volumes of the injectate in Specific Conditions Part III.E and Attachment E. The Draft Permit also documents the expected chemical components of the injectate and how the injectate functions in a closed loop circuit. The Draft Permit also documents monitoring and reporting requirements for the chemistry and volume of the injectate. The rates of injection vary depending upon the local hydraulic properties of the formation, which will be determined and reported as part of the Formation Testing results (DWQ 2020a: III.E.2). However, per Draft Permit conditions in Part III.F and Attachment E, the rate of injection cannot cause maximum allowable surface injection pressure to exceed the fracture gradient at any depth in the injection well or cause fluid levels to approach 50 feet from the ground surface. There is no requirement to restate in the FSSOB all the information on project process fluids and treatment that is already in the Draft Permit. There is no requirement to evaluate radon emissions in the UIC permit per R317-7 or incorporated federal regulations under the SDWA.

Comment 25.14

3.5 The Fact Sheet is supposed to contain a “brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record.” The Fact Sheet does not contain any information about the draft permit conditions, including references to applicable statutory and regulatory provisions, with supporting references to the administrative record. There is no discussion of how, exactly, the proposed project meets the applicable technical criteria and standards.

Comment 25.14: Division Response

The FSSOB contains a brief summary of the basis for the Draft Permit provisions and is not required to restate all the conditions that are written in the permit. Specifically, the FSSOB summarizes what permit conditions are in each part of the permit, provides references to the provisions in the Utah Administrative Code that were used in developing the permit conditions, and provides references to research used in developing the specific Draft Permit conditions. The FSSOB is not required to, and should not, repeat every specific condition or piece of information in the Draft Permit, as evidenced by the CFR's repeated use of the word "brief" to describe what must be in a Fact Sheet.

Comment 25.15

3.6 The Fact Sheet minimal information regarding the procedures for reaching a final decision on the draft permit.

Comment 25.15: Division Response

The FSSOB summarizes the procedures for reaching a final decision on the Draft Permit and proposed Aquifer Exemption. Relevant regulatory requirements are called out and provided in the FSSOB.

Comment 25.16

3.7 The Fact Sheet contains various statements related to the proposed project, but does not provide any references or bases for those statements.

Comment 25.16: Division Response

The FSSOB provides references to 40 CFR, the corresponding State regulations in Utah Administrative Code R317-7, and academic references used in formulating the technical conditions in the Draft Permit. 40 CFR § 124.8 does not require references for every statement in an FSSOB, and it is not clear what further specific references this comment seeks. References to analogous in situ copper recovery UIC permits and other references provided in the FSSOB are repeated here:

- Arizona Mining Guidance — BADCT, Arizona Department of Environmental Quality. https://static.azdeq.gov/wqd/app_badctmanual.pdf.
- ASTM D5092 / D5092M - 16 Standard Practices for Design and Installation of Groundwater Monitoring Wells.
- EPA, 2016. Underground Injection Control Program Area Permit, Class III In-Situ Production of Copper Permit No. R9UIC-AZ3-FY16-1. Gunnison Copper Project Cochise County, Arizona.

Issued to Excelsior Mining Arizona, Inc. Concord Place, Suite 300 2999 North 44th Street
Phoenix, Arizona 8501.

- EPA, 2016. Underground Injection Control Program Area Permit, Class III In-Situ Production of Copper Permit No. R9UIC-AZ3-FY11-1. Florence Copper Project, 1575 West Hunt Highway Florence, Arizona 85132. Issued to Florence Copper Inc., 1575 West Hunt Highway Florence, Arizona 85132.

Comment 25.17

3.8 The Fact Sheet states that “Utah does not have specific statutes and regulations for the construction and operation of in-situ recovery wells and well fields, in general, and for copper recovery, specifically.” Therefore, the public in Utah has not had the opportunity to comment on specific statutes and regulations for the construction and operation of in-situ recovery wells and well fields for copper and other types of mineral recovery operations.

The State of Utah should not accept and review ISL mineral recovery applications until Utah has established applicable regulatory programs.

Comment 25.17: Division Response

The UIC program and regulations are the appropriate regulatory structure under which to permit solution mining operations and wells including in situ copper recovery. Commodity-specific guidance documents used to develop specific permit conditions are referenced in the Division’s response to UWSC comment 25.16 above.

Comment 25.18

3.9 The Fact Sheet states: “Moreover the Draft Permit is justified on the basis of the limited extent and use of the Burro Canyon aquifer in the proposed permit area, the occurrence of mineralization of potential commercial value and relatively poor water quality.” This apparent conclusion does not identify and discuss the important use of the Burro Canyon Aquifer (BCA) for domestic, irrigation, and stock watering purposes. There is no discussion of the fact that the quality of the water varies within the BCA.

Comment 25.18: Division Response

The BC Aquifer is not used for domestic, irrigation, or stock watering purposes within the Draft Permit boundary or the portion of the BC Aquifer in the proposed Aquifer Exemption boundary. See also the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended

for clarity and republished, although the Division maintains that the FSSOB is not required to contain all detail and supporting information provided in the Draft Permit.

Comment 25.19

3.10 The Fact Sheet states that “Lisbon Valley will overproduce solution from production wells in order to maintain an inward hydraulic gradient and contain leach solutions within the permit area.” It states that, “monitoring wells will be installed to ensure that no injectate or leach solution escapes from the wellfields and permit area,” and that “any vertical migration will also be detected by deep monitor wells within the Morrison and Navajo Formations.” These statements are unverified assumptions. The documentation does not support these conclusions. The monitoring wells will not, in themselves, ensure that no leach solutions escape from the well fields. They will only be able to identify excursions of leachate—if properly placed and operated. Monitoring wells do nothing to control those excursions. The wells serves to identify excursions, but trigger actions only after excursions are detected.

There are no explicit regulatory standards at the federal level for monitoring wells. Monitoring wells should be placed close enough to the well field to ensure timely detection of contamination. According to an Natural Resource Defense Council report,⁵ Early detection of excursions may depend on a number of factors, including the thickness of the aquifer monitored, the distance between the monitor wells and the well field and the spacing of monitor wells, the frequency of monitor-well sampling, the water-quality parameters being sampled, and the concentrations of the parameters chosen to signal an excursion.

Comment 25.19: Division Response

Please see the Division’s response to Group Comment 7. The operating conditions specified in the Draft Permit (DWQ 2020a: III.F and Attachment E), include overproduction from recovery wells, which has been based on already issued UIC permit criteria and precedents in Arizona and specified in BADCT required by the state. These have been demonstrated to be protective by in situ copper recovery pilot tests and commercial in situ uranium recovery operations over the past five decades.

The Draft Permit requires that a corrective action plan (see DWQ 2020a: III.C and Attachment C) has to be implemented if excursions are detected in monitoring wells (see DWQ 2020a: III.G and Attachment F) to meet water quality standards outside the permit boundary. The corrective action will be determined based on the location and information gathered from monitoring but will likely include changing the operation of the in situ copper recovery wells and wellfield itself to contain the excursion. In some cases, pumping monitoring wells can be used to intercept and control leach solutions.

⁵ Nuclear Fuel’s Dirty Beginnings: Environmental Damage and Public Health Risks From Uranium Mining in the American West, by Geoffrey H. Fettus and Matthew G. McKinzie, Natural Resources Defense Council, March 2012.

Comment 25.20

4. Availability Class III Area Permit Documents

4.1 The Division made available on the DWQ Public Notice website a draft Class III Area Permit, Underground Inject Control (UI) Program, UIC Permit Number: UTU-37-AP-5D5F692, Lisbon Valley Mine, San Juan County, Utah, October 2020. The 69-page Document references several attachments, which are part of the Permit: Attachment A, General Location Map of the Lisbon Valley Mine, San Juan County; Attachment B, Map of the UIC Area of Review including the Class III In-Situ Copper Recovery Injection Wells and the Project Area; Attachment C, Corrective Action Plan for Artificial Penetrations into Injection Zone within Area of Review; Attachment D, Injection Well Construction Plan with Injection Well Construction Details; Attachment E, Injection Well Operating Plan and Procedures; Attachment F, Monitoring, Recording, and Reporting Plan; Attachment G, Contingency Plan for Well Shut-ins or Well Failures; Attachment H, Groundwater Restoration Plan; Attachment I, Plugging and Abandonment Plan; Attachment J, Financial Responsibility (The Standby Trust Agreement along with Schedule A and the Associated Financial Guarantee Bond will be approved and delivered to the DEQ's Office of Support Services prior to Director Authorization to Inject); Attachment K, Expected Changes Due to Injection; Attachment L, Mechanical Integrity Demonstration Protocols; and Attachment M, Aquifer Exemption.

Some of these Attachments are currently available, but were not included in the UIC Permit documents. Other attachments that will become part of the Permit will only become available after the UIC Permit is issued, so will not be available for public comment. The Division should have made available any of the UIC Permit Attachments that are currently available.

Comment 25.20: Division Response

The Division made available all of the complete Draft Permit attachments with the electronic notice on its website on October 31, 2020, just prior to publishing the public notice in the *San Juan Record* on November 4, 2020. Some of the attachments will be completed prior to well construction and initiation of operations per Draft Permit conditions (see DWQ 2020a: III.E and III.L). These attachments were not required for approval of the Draft Permit because they will be developed for the specific ore bodies that will be drilled for completion of injection and recovery wells. However, the updated submissions required by these attachments must still meet conditions specified in the Draft Permit and must be submitted for Division approval before LVMC can continue operations. The exact timing and sequence of wellfield completion and operation is up to the operator and depends on business decisions that are not part of the Draft Permit.

Comment 25.21

5. Request for a New UIC Class III Permit Public Comment Period and Public Hearing

5.1 UW requests that the DWQ Notice a new 60-day public Comment Period and Public Hearing after the DWQ corrects the public record of this proceeding. This request is based on the following:

- *The documents that the Division posted on the Public Notice website as part of the LVMC Application contain significant conflicting information regarding the Aquifer Exemption Boundary.*
- *The Statement of Basis and Fact Sheet provided by the Division does not meet the EPA requirements.*
- *The proposed Class III Permit is missing the Attachments that are currently available and should have been available for public comment.*

The new comment period and hearing should not commence until the Division has corrected these oversights and inadequacies. The Division must 1) make clear which documents, including maps and figures, are actually part of the Class III UIC Permit Application under review, 2) make publicly available the relevant Attachments to the proposed Class III UIC Permit; and 3) provide a Fact Sheet that fully conforms to EPA requirements.

Comment 25.21: Division Response

All the required information for public comment on the LVMC UIC Draft Permit and proposed Aquifer Exemption was available on the Division's website during the 68-day public comment period.

Comment 25.22

6. Utah UIC Regulations - R317-7-5. Prohibition of Unauthorized Injection

6.1. *Utah Rule R317-7. Underground Injection Control (UIC) Program, provides certain requirements for a Class III UIC Permit. Section defines Class III wells as wells that inject for extraction of minerals, including in situ production of uranium or other metals from ore bodies that have not been conventionally mined. R317-7-5 states:*

5.1 Any underground injection is prohibited except as authorized by permit or as allowed under these rules.

5.2 No authorization by permit or by these rules for underground injection shall be construed to authorize or permit any underground injection which endangers a drinking water source.

5.3 Underground injections are prohibited which would allow movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation (40 C.F.R. Part 141 and Utah Primary Drinking Water Standards R309-200-5), or which may adversely affect the health of persons. Underground injections shall not be authorized if they may cause a violation of any ground water quality rules that may be promulgated by the Utah Water Quality Board. Any applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

6.2. The Division has not provided any information that demonstrates that the proposed Lower Lisbon Valley in-situ leach (ISL) copper recovery project would not endanger a drinking water source and would not would allow movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation (40 C.F.R. Part 141 and Utah Primary Drinking Water Standards R309-200-5), or which may adversely affect the health of persons.

Comment 25.22: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.23

The BCA is currently an underground source of drinking water. The BCA 1) contains a sufficient quantity of ground water to supply a public water system; 2) currently supplies drinking water for human consumption; 3) contains fewer than 10,000 mg/l total dissolved solids (TDS); and is not an exempted aquifer. The BCA, as shown on the various Maps and Figures submitted by LVMC to the DWQ, supplies water for irrigation, stock watering, and domestic use in the Area of Review and within the original proposed Aquifer Exemption Boundary.⁶ LVMC has not established Baseline Water Quality in the South East area of the project.

Comment 25.23: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

After in situ copper recovery operations are complete, the BC Aquifer groundwater will be restored to water quality standards based on technical and economically feasible constituent levels. The baseline

⁶ See Technical Report Attachments, Maps and Figures. And, Figure 3.1.
https://uraniumwatch.org/lisbonvalleymine/LVMC_UIC_TechReport_Map_Figure3.1_AreaofReview.png

water quality has been determined by LVMC based on analysis of water quality samples that were collected from existing wells. These analyses are summarized in Table 16.1 of Attachment M of the Draft Permit (DWQ 2020a). During ISR operations, additional monitoring wells will be completed in the southeast area of the project and samples will be collected and analyzed to determine baseline water quality in this area per specific permit conditions in the Draft Permit (DWQ 2020a: Parts III.G, III.H, and Attachment F).

Comment 25.24

6.3 The LVMC Internal Memo: Summary of the Groundwater Occurrences within the Lower Lisbon Valley Area, February 16, 2020,^{7,8} was “prepared in order to summarize the occurrence of groundwater within the BC Aquifer of the Lower Lisbon Valley Area, and the rationale behind this conclusion.” LVMC investigated the Groundwater Occurrence in the Dakota-Burro Canyon Formations, SE UIC Project Area, Lower Lisbon Valley, San Juan County, Utah. The area investigated was South East area of the original proposed AEB, which ends at the Utah/Colorado border and includes the Wilcox domestic/agriculture Well 05-3907/05-3575 and the State Line Deposit. This Memo establishes the presence of groundwater and hydrological connectivity in the BCA in this area. According to the Memo, page 5:

Exploration Groundwater Flows

The area from Flying Diamond to the Colorado Stateline has been extensively drilled. Figure 3 is a compilation of drilling records documenting depth at which groundwater flow was observed along with estimates of final flows at total depth using a 5-gallon bucket test. And although not monitoring wells, the number and areal extent of exploration holes document consistent groundwater occurrence and substantial flows over the greater than two-mile distance from Flying Diamond to Stateline.

Stock well 05-3575 is located near the Stateline deposit (see Figure 2). This well is screened in the upper BC Aquifer and documents a hydraulic head 45 feet below ground surface (bgs).

Groundwater flows attenuate and finally terminate on the SE end of the Stateline Deposit where geologic structure elevates the Morrison Formation above the BC Aquifer hydraulic head. Figure 3 includes an expanded view of exploration holes 06C-FLD-10 and 06R-FLD-5 (described further).

The Memo concludes:

⁷ https://uraniumwatch.org/lisbonvalleymine/LVMC_UIC_TechReport_AppendixE_LLVGroundwater_021620.pdf

⁸ Appendix D to LVMC UIC Technical Report Appendices posted on DWQ Public Notice website.

The combined information supports the occurrence of BC Aquifer groundwater along an approximate 2.5 mile transect in the SE Project Area. This information suggests the occurrence of groundwater in the BC wherever it is down-dropped below 6200 feet amsl. These observations correlate well with the greater Project Area and support a common aquifer.

Comment 25.24: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.25

6.4 The LVMC Internal Memo—Summary of the Exploration Activities within the Lower Lisbon Valley Area, and the subsequent delineation of mineralization found therefrom,^{9,10} February 16, 2020, shows that the Flying Diamond Deposit is close to the Wilcox Well 05-3907/05-3575, which has now been arbitrarily excluded from the AEB.

Comment 25.25: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.26

6.5. The injection of the proposed lixiviant, a raffinate containing a dilute sulfuric acid solution, into the Burrow Canyon Aquifer would allow movement of fluid containing sulfuric acid, uranium, and other contaminants into an underground source of drinking water. It would allow for the movement of contaminants from the well field to the Wilcox Well 05-3907/05-3575, used for domestic, irrigation, and stock watering. The Wilcox well draws water from the same aquifer that will receive the lixiviant. There are no geologic barriers between the proposed wellfield and the Wilcox Well outside the proposed Aquifer Exemption boundary. The LVMC has not proposed any monitoring well that would be able to determine if fluids and mobilized contaminants from the ISL project have reached the Wilcox Well.¹¹

The AEB in the area of the Wilcox Well does not include a buffer zone beyond the proposed monitoring well in that South East area. The monitoring well appears to be right on the edge of the AEB. There is no information in the Application regarding how far an excursion of the lixiviant and the contaminants

⁹ https://uraniumwatch.org/lisbonvalleymine/LVMC_UIC_TechReport_AppendixE_ExplorationandMineralization_LLIV_021620.pdf

¹⁰ Appendix D to LVMC UIC Technical Report Appendices posted on DWQ Public Notice website.

¹¹ See Lower Lisbon Valley IRS Technical Report, Figure 11.6. September 29, 2020.

mobilized by the lixiviant would travel before being detected and recovered. There is no information regarding the extensive history of ISL uranium recovery operation excursions, spills, leaks, mechanical failures, and other events.¹² There is no data that would substantiate an assumption that any excursion would be recovered and the area would still be a clean, uncontaminated source of drinking water. Also, there is no evaluation of the long-term impacts from the ISL operation to the groundwater quality in the South East Area of ISL project.

Comment 25.26: Division Response

The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F). Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). The “buffer zone” is that portion of the permit boundary and Aquifer Exemption volume that is between in situ copper recovery wellfields and injection and recovery zones. As the primary targets are the “Flying Diamond” and “Little Indian” ore bodies, on the northeast and southeast edges of the Aquifer Exemption volume, respectively, and both are west of the eastern permit and Aquifer Exemption boundary, a buffer zone has been defined by the location of the eastern edge of the BC Aquifer Exemption volume. See also the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

The long-term impacts from in situ copper recovery are addressed in the Draft Permit by groundwater restoration requirements to be implemented after copper recovery operations are completed as required in the Draft Permit (DWQ 2020a: III.J and Attachment H).

Comment 25.27

6.6. The regulation states: “Underground injections shall not be authorized if they may cause a violation of any groundwater quality rules that may be promulgated by the Utah Water Quality Board.” The regulation here says “may cause” a violation of any groundwater quality rules. Because the proposed ISL operation will impact the existing BCA drinking water source and is extremely close to a well that is used for domestic purposes, LVMC and the Division have no basis for concluding that the underground injections

¹² See Exhibit A. Uranium Recovery In-Situ Leach Operations License Violations and Reportable Events.

associated with the ISL project will not cause a violation of any groundwater quality rules. The lack of any geological or hydrological barriers between the proposed well field and the Wilcox Well means that the proposed ISL project not only “may,” but most likely “will” cause of a violation of drinking water rules, will endanger a drinking water source, and will adversely affect the health of persons.

Comment 25.27: Division Response

The Division responded to this comment in its response to UWSC Comment 25.22.

Comment 25.28

6.8. The LVMC Technical Report Appendix J, is a 22-page Groundwater Resources Report, Lisbon Valley Mining Company LLC, Lower Lisbon Valley Project, Supplemental Environmental Impact Statement (SEIS), dated March 2020.¹³ It is unclear why this document is included as an Appendix. A UIC Class III Permit application does not require an Environmental Impact Statement. The SEIS states in regard to the scope of the proposed action: “The Company is planning to expand current conventional open pit mining operations as well as implement in-situ recovery (ISR) operations in the Lower Lisbon Valley Mining District of San Juan County, Utah.” Apparently, LVMC intended to submit SEIS to the Bureau of Land Management. The scope of the very brief and inadequate SEIS is for both an expanded open pit/heap leach operation and the proposed ISL operation.

The SEIS contains one relevant statement at Section 3.2.2 (page 10):

*ISR activities would involve the exempting of the BC aquifer only as it exists within the LLV groundwater study area. The localized and perched alluvial aquifer would not be exempted, nor would the N aquifer. As the BC aquifer is confined geologically and structurally within the study area, **the effects to the BC aquifer would be considered major, localized, and long-term.** [Emphasis added.]*

Comment 25.28: Division Response

The Division does not have the authority to regulate beyond the governing UIC statute and regulations, including federal NEPA permit status and compliance. However, some of the information in the SEIS is useful in understanding the hydrogeology of Lisbon Valley for the purposes of writing the Draft Permit.

See the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

¹³ https://uraniumwatch.org/lisbonvalleymine/LVMC_UIC_TechReport_AppendixJ_LLW_GroundWater_ResourceReport_033120.pdf.

Comment 25.29

6.9. In Sum: The proposed UIC Class III Permit must be denied because the proposed underground injections should be prohibited due to the fact that the injection would endanger a drinking water source and would allow movement of fluid containing contaminants into underground sources of drinking water. The presence of those contaminants would cause a violation of any primary drinking water regulation (40 C.F.R. Part 141 and Utah Primary Drinking Water Standards R309-200-5). The presence of those contaminants would adversely affect the health of persons who live adjacent to the propose ISL site and to those who use nearby wells for drinking and agricultural purposes.

Comment 25.29: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.30

7. Aquifer Exemption

7.1. Utah Rule R317-7-4. Identification of USDW's and Exempted Aquifers states:

The Director shall identify USDW's and exempt aquifers following the procedures and based on the requirements outlined in 40 C.F.R. 144.7 and 40 C.F.R. 146.4.

Relevant Sections of 40 C.F.R. § 144.7:

- (a) The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect as underground sources of drinking water, all aquifers and parts of aquifers which meet the definition of*
- (b) "underground source of drinking water" in §144.3, except to the extent there is an applicable aquifer exemption under paragraph (b) of this b) (1) The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in §146.4 of this chapter.*

EPA Regulations at 40 C.F.R. § 146.4 set out the criteria for exempted aquifers. The Division did not identify the Underground Sources of Drinking Water (USDW) or the proposed aquifer exemption area associated with the proposed Class III UIC Permit area. The Division did not provide any analysis of an Aquifer

Exemption Request and the documents supporting that request. The Division has not explained how the proposed Aquifer Exemption meets the relevant criteria. The Division has not provided any basis for approving, amending, or not approving an Aquifer Exemption Request related to the proposed ISL Project.

Comment 25.30: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.31

7.2. The EPA has developed Guidelines for Reviewing Aquifer Exemption Requests.¹⁴ There is no evidence that the Division has reviewed an Aquifer Exemption Request in accordance with Guidelines, documented its review, and made the Request and Review documents available for public comment.

Comment 25.31: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.32

7.3. In sum: The Division's draft analysis and response to that request for public comment. Therefore, at this, time there is no basis for the Division to grant an Aquifer Exemption for the proposed ISL operation in the Lower Lisbon Valley and the Division must correct the record and provide for a comment period and hearing on the Aquifer Exemption.

Comment 25.32: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.33

7.4. Commenters reference and incorporate the comments on the Aquifer Exemption made by the Lower Lisbon Valley Residents, dated January 10, 2020.

¹⁴ Guidance for Review and Approval of State Underground Injection Control (UIC) Programs and Revisions to Approved State Programs. GWPB Guidance #34, Environmental Protection Agency.

Comment 25.33: Division Response

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 25.34

8. Additional Comments

8.1. The Division has referenced and relied on State of Arizona and EPA consideration of copper recovery operations. The Division should also have reviewed and taken into consideration the long history of ISL uranium recovery operations, which have been regulated primarily by the Nuclear Regulatory Commission until 2018, when Wyoming became an Agreement State for uranium recovery and 11e.(2) byproduct material. There is no difference between the proposed LLV copper recovery ISL project and a ISL uranium recovery ISL project, except that uranium will not be removed from the recovery leachate. There is extensive documentation regarding spills, excursions, leaks, mechanical failures for these types of projects, a documented in Exhibit A. There is extensive information about the inability of the ISL operator to return the aquifer to the original water quality parameters. There is extensive information about the ability of the ISL operator to recover contaminants that went outside the well fields. There is extensive information regarding the success of different recovery techniques and how long recovery has taken.

Comment 25.34: Division Response

The prescriptive and non-prescriptive BADCT guidance developed by the State of Arizona was based in part on technical information and performance records for all types of ISR operations, including uranium. Therefore, the Division's reference to these BADCTs implicitly incorporates the industry standards of uranium in situ operations in the United States. Similarly, the EPA uses the same UIC regulations for permits for in situ copper and uranium recovery. UIC permit regulations pertaining to excursions from injection and recovery operations were addressed in the Division's responses to UWSC comments 25.22 through 25.29 regarding Utah UIC Regulations R317-7-5. Prohibition of Unauthorized Injection.

In the matter of the LVMC Draft Permit and proposed Aquifer Exemption, the Division does not have the authority to regulate beyond the governing UIC statute and regulations, which do not allow permit denial based on the potential for surface spills. However, other Utah regulations include requirements for stormwater permits and Spill Prevention, Containment, and Countermeasure plans.

Comment 25.35

8.2. In-Situ Leach Uranium Mining Process and Its Environmental Impacts

Commenter incorporates by reference the discussion of In-Situ Leach Uranium Mining Process and Its Environmental Impacts contained in “Nuclear Fuel’s Dirty Beginnings: Environmental Damage and Public Health Risks From Uranium Mining in the American West,”¹⁵ pages 25 to 33.

Comment 25.35: Division Response

The report is not considered because it is not part of the Draft Permit (DWQ 2020a), which is the legal regulatory document that defines all permit conditions and technical bases.

Comment 25.36

8.3. The LVMC must conduct a Baseline Water Quality Assessment in the vicinity of the Wilcox and Stevenson wells, both of which are in the Burro Canyon Aquifer.

Comment 25.36: Division Response

LVMC presented a Baseline Water Quality Assessment in their permit application (LVMC 2019), and this information was considered and incorporated into the Aquifer Exemption Request, which is Attachment M of the Draft Permit (DWQ 2020a). LVMC’s Burro Canyon well (PW-9) is furthest from the open pit, and additional monitoring wells and water quality testing is required by the Draft Permit per Part III specific conditions in Section G and Attachment F. Based on public comments received, the Division determined that the basis for the draft Aquifer Exemption was not clearly stated in the Draft Permit and FSSOB (DWQ 2020a, 2020b). As a result, the Division will revise and re-post both documents for public notice.

COMMENT 26: WILLIAM P. JOHNSON, PHD, URANIUM WATCH, JANUARY 5, 2021

Comment 26.1

I have been asked by Uranium Watch (a non-profit organization in Monticello, Utah) to review Lisbon Valley Mine’s Underground Injection Control (UIC) Class III draft permit application. My qualifications for this review are that I am a hydrologist specializing in groundwater contaminant transport with forty years of experience as a researcher, first at the US Geological Survey and then at academic institutions with more than forty federal, state, and private sector funded research projects. I have produced more than one hundred peer-reviewed publications in the subject of groundwater contaminant transport, which you can view on Google Scholar (https://scholar.google.com/citations?user=C9qB_GqAAAAJ&hl=en&authuser=1).

¹⁵ Nuclear Fuel’s Dirty Beginnings: Environmental Damage and Public Health Risks From Uranium Mining in the American West, by Geoffrey H. Fettus and Matthew G. McKinzie, Natural Resources Defense Council, March 2012. <https://www.nrdc.org/sites/default/files/uranium-mining-report.pdf>.

I am also a Full Professor in the Department of Geology & Geophysics at the University of Utah, although my comments are not intended to represent any potential viewpoint on the part of the University.

Because LVM's existing open-pit heap-leach operation are reported to utilize liners to prevent loss of lixiviant to the subsurface, the proposed subsurface injection of lixiviant directly into the Burro Canyon aquifer (BCA) represents a major change in operation. Consideration of permitting proposed in-situ recovery (ISR) must therefore be predicated on a careful analysis of potential impacts.

The application misrepresents both the current utilization of BCA groundwater as well as likelihood of potential impacts of ISR to users of both BCA and Navajo aquifer (NA) groundwater. There are at least two families with drinking water supplies potentially impacted by the proposed ISR process. The Wilcox and Stevenson families each have domestic water supply wells in the Burro Canyon aquifer (BCA) immediately adjacent to the proposed project area.

The analysis of potential impacts presented in LVM's application is inadequate. The potential hydraulic and transport impacts to domestic water supply and quality were not genuinely assessed. Many of the statements made in the proposed application to suggest a lack of potential impact to current BCA and NA groundwater users were not adequately substantiated.

Regarding characterization of current use of BCA water, on Page 17 of the application, it was stated that "the BC groundwater quality is very poor, and there are no registered domestic, residential, municipal, or other commercial water wells in the BC aquifer in the Project Area besides LVMC." This statement is not an accurate characterization in multiple respects: With respect to "BCA groundwater quality being very poor," this statement is contradicted by substantiated statements in Appendix C, Noyes Thesis in which the quality groundwater in BCA is demonstrated to be comparable to that of NA, and that both aquifers demonstrate poor water quality depending on location. The major difference between them is whether their elevated trace elements are associated with ores (BCA) or not (NA). A direct excerpt from the thesis demonstrates the distinction: "In general ore-forming trace elements such as Cu, Fe, Co, Mn, and U were found, on average, in higher concentrations in the BCA than in the NA. Additionally, trace element Rb was generally observed at higher concentrations in the BCA than the NA. Conversely, other trace elements such as V, Ni, Zn, and Ba were found at higher concentrations in the NA than the BCA on average. Al and As were found at generally comparable concentrations in the two aquifers. Of note, As exceeded the U.S. EPA's drinking water standard for As (10 µg/L) in BCA well PW-4 (35.1 µg/L) and NA wells PW-7 (22.7 µg/L) and MW97-13 (10.7 µg/L). Additionally, exceedances of the U.S. EPA's drinking water standard for U (30 µg/L) were observed at BCA wells PW-3 (41 µg/L) and PW-4 (86 µg/L)." The blanket characterization in the application that BCA water is "poor" does not reflect the variable quality with location in both BCA and NA, and current and previous use of BCA groundwater for domestic and drinking water purposes. Furthermore, the proposers' own Table 12.4 (page 155) also shows comparable water quality between BCA and NA depending on location.

With respect to a lack of registered domestic or residential wells in the proposed project area, the application is technically correct, but does not accurately portray the water use situation relative to the proposed project area. The statement asserting no possible impact to USDW, and no possible use of the BCA aquifer in Section 16.2 on page 169 is highly inaccurate. According to Figures 3.2, 3.43, and 4.3, three domestic wells (Wilcox 05-3907 and 05-2589 (abandoned) and Stevenson 05-2970) lie immediately adjacent to the proposed project area boundaries. In fact, the project area boundaries encompassed the Wilcox domestic supply well in earlier versions available in 2020, demonstrating that the applicants became aware of this water use after their earlier versions of the project area boundary. While the applicants amended the project area boundary accordingly, the aquifer characteristics of course cannot be amended, and it is not clear in the application how the proposed ISR will protect against hydraulic and transport impacts to water availability and water quality for these wells immediately adjacent to the project boundary. The report does not seem to consider which aquifer (BCA or Navajo Aquifer, NA) is tapped by these wells, but available well records indicate that 05-3907 and 05-2970 are screened at depths of 151 ft and 220 ft below ground surface, respectively. These depths appear to place both wells within the BCA immediately adjacent to the project boundary, and therefore at significant risk of impact from ISR operations. On the basis of geologic observations, the application characterizes the BCA as a pocket that accepts water from all sides. However, there is no identified geologic or hydrologic feature that separates the domestic supply wells from the proposed ISR, as demonstrated in Figure 3.22 on page 62. Amending the proposed project boundary to barely exclude the domestic supply well provides no protection. The means to provide protection is to characterize zones of hydraulic and transport impact from ISR operations. This was not done. The zone of influence needs to be convincingly characterized for multiple pilot versions of their injection/recovery modules across different locations within the project area before any realistic assessment of potential risks to domestic supply wells can be made. Rather than provide this necessary information, LVM's application unrealistically claims without sufficient substantiation that the hydrologic system is somehow protective of domestic water use across the scale of the graben. Notably, the potential hydraulic impacts to other users of BCA are amplified if the BCA is confined as argued by the proposers. Sensitivities of hydraulic heads (water levels in wells) to pumping is much greater and transmits across much larger areas in confined relative to unconfined aquifers. Therefore, the areal buffer needed between ISR and other BCA users can be expected to be much larger in BCA relative to other ISR applications in unconfined aquifers.

Comment 26.1: Division Response

While the commenter's stated qualifications in the beginning of the comment are duly noted, Division staff includes PhD hydrologists and geochemists who have extensive ISR and solution mining experience. In addition, they are Utah registered professional geologists and have the education, experience, and certifications necessary to evaluate this data. The remainder of this comment is directed primarily towards the Technical Report (LVMC 2020) which is not part of the public notice package. See Group Response 7 as well as the Division's Responses to both the Wilcox and Stevenson families in this document. See also

the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 26.2

The proposers' characterization of the hydrologic system within the graben as a "closed system" (e.g., pages 19, 25, and echoed in the Draft Permit) is based primarily on geologic rather than hydrologic considerations, and so is not reasonably substantiated and is not supported by groundwater age data. A primary line of reasoning regarding the "closed system" nature of BCA was geologic in nature, with statements made, for example on page 60, that the BC Aquifer "is discontinuous and segmented, lying at a depth of 200-900 feet below the surface, and approximately 450 feet in thickness." On page 61 it is stated: "In the Project Area, faulting has limited the areal extent and the hydraulic connection of the N Aquifer, which lies at a depth of 800 to 2,200 feet below the surface. The Lisbon Valley Fault strikes N40°W and dips 30 to 55 degrees to the northeast. In addition, the Lisbon Valley Fault splays into numerous "horsetail" faults to the south. These faults have significant vertical displacement and juxtapose permeable units against relatively impermeable units. This juxtaposition, along with gouge material along the fault surfaces, causes the fault zones to behave as barriers to groundwater flow. As a result, there is substantial compartmentalization of the N-aquifer." The proposers are using geologic arguments to draw conclusions regarding hydrologic processes. Whereas the geologic aspects are necessary, they are insufficient, since permeability is highly variable (heterogeneous) and so bulk characteristics of any particular unit do not define its permeability at all locations. Appendix C of the application provides an excellent example of the fact that local measurements cannot be extrapolated across entire units since, for example, on the bottom of page 23 of Appendix C the locally measured hydraulic conductivity of NA (the regional water supply aquifer) is far lower than that of the BCA, or even the Mancos and Morrison formations that were asserted in the application to be impermeable barriers to flow out of the BCA. As stated in Appendix C: "based upon various down-well methods (e.g. packer tests, bailer recovery tests, etc.) conducted around the region, hydraulic conductivity of the BCA ranges from 1.59×10^{-7} to 2.72×10^{-6} m/s; hydraulic conductivity of the Morrison Formation ranges from 1.27×10^{-6} to 3.46×10^{-6} m/s; and hydraulic conductivity of the NA is lower and ranges from 7.06×10^{-8} to 1.20×10^{-6} m/s." The vast inaccuracy of extrapolating local hydraulic conductivity measurements across the scale of these geohydrologic units is why the proper method to determine flow directions and fluxes in hydrologic systems is to develop piezometric surfaces across the project and review areas, which the proposers have not done.

On page 61, the proposers link the geology to hydrology without providing data to support the links they propose. The text states: "The graben juxtaposes the younger BC Aquifer with older formations including Morrison and N-Aquifer formations ... The BC aquifer is confined laterally by geologic structures and non-transmissive faults. Valley-bounding faults truncate the BC on north & south boundaries. Elevating structures dewater the BC on east & west boundaries. The BC Aquifer is vertically confined above and

below by the Mancos Shale and Morrison Formation Brushy Basin Member.” No piezometric surface maps were provided to support these statements.

On page 65 and in Figures 3-25 and 3-26, the proposers further characterize the project area (the graben) as a regional hydrologic sink into which water flows laterally from all directions. Figure 3.14 depicts the graben-inward groundwater flow without substantiation by hydraulic head data. The proposers emphasize that this sink is also bounded from above and below by the Mancos and Morrison formations, respectively. They, therefore, argue that the graben accepts water from all sides, but does not emit water. As such, they argue that the graben acts like a pocket, or because they assert that this occurs indefinitely, the pocket is more akin to a black hole, indefinitely accepting mass without returning it. The challenge of this argument is obvious, and demonstrates a tendency to promote all arguments to support their position rather than genuinely investigate how this hydrologic system works and determine the potential impacts to other users. Given the proposers’ arguments, it would seem that the graben filled with groundwater well before the current geologic age, likely when the graben formed in the Tertiary, that is during the Tertiary Period more than 1.6 million years ago. In contrast, geochemical and isotopic characterization of BCA ground water (Appendix C) demonstrates that the water age is Holocene (within past 11,000 years). The abstract states that: “Corrected radiocarbon ages in the BCA of 3,300-11,000 BP coupled with $\delta^{18}\text{O}$ and δD values in the range of modern precipitation are indicative of recharge occurring during the Holocene.” This finding does not support the proposers’ assertion that the graben accepts and holds water indefinitely. Furthermore, the proposers’ hydrologic characterization is sparse, supported by a total of 10 hydraulic head measurements describing two transects representing the entire area within and outside the graben, as shown in Figures 3-25 and 3-26. Because seasonality may affect hydraulic heads, such comparisons need to account for season, in addition to year-to-year changes, whereas no such considerations were provided.

Comment 26.2: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C).

Additionally, LVMC must submit a Construction Plan prior to drilling and must disclose any materials used, including drilling fluids and additives, which must be approved by the Division in accordance with existing parameters in the Draft Permit (DWQ 2020a). All well construction materials and methods must be described in the Construction Plan and submitted to the Division for approval before any construction commences. Per Part III.D.1 of the Draft Permit (DWQ 2020a), each well shall be constructed according to the requirements for Class III wells set forth in R317-7-10.1(B) and 40 CFR § 146.32, details of which are included in the Draft Permit conditions defined explicitly in Part III.D.2 through Part III.D.10. In addition, injection zone characterization is required Per Part III.D.7 of the Draft Permit (DWQ 2020a) to provide information on hydraulic properties of the injection zone and ensure containment of leach solutions through appropriate wellfield design and controls in compliance with the Class III injection well operation standards set forth in Part III.F.1 of the Draft Permit.

The long-term impacts from in situ copper recovery are addressed in the Draft Permit by groundwater restoration requirements to be implemented after copper recovery operations are completed as required in the Draft Permit (DWQ 2020a: III.J and Attachment H). The “buffer zone” is that portion of the permit boundary and Aquifer Exemption volume that is between in situ copper recovery wellfields and injection and recovery zones. As the primary targets are the “Flying Diamond” and “Little Indian” ore bodies, on the northeast and southeast edges of the Aquifer Exemption volume, respectively, and both are west of the eastern permit and Aquifer Exemption boundary, a buffer zone has been defined by the location of the eastern edge of the BC Aquifer Exemption volume. See also the Division’s response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 26.3

It is also not clear why so little quantitative hydraulic head data was provided, given that, as stated in Appendix C (the Noyes thesis), there exist at least 19 completed wells and 2 uncased boreholes in the project area that in the Noyes thesis alone were sampled during November 2017, March 2018, July 2018, and August 2018. Additionally, the Noyes thesis states that results from samples collected at these locations “extend back decades,” citing a report from Whetstone Associates, 2018.

Characterization of the hydraulic gradients across the boundaries of the graben requires compilation of hydraulic heads across those boundaries at a representative number of locations along the graben perimeter, which was not done in the application. If the majority of existing wells are concentrated in one zone of the project area such that they cannot represent the larger graben, then that places the responsibility on the proposers to develop the needed observations to support or refute their characterization. Confusingly, Appendix E of the application: Summary of the Ground Water Occurrences within the Lower Lisbon Valley Area (LVMC_UIC_TechReport_AppendixE_LLVGroundwater_021620.pdf) shows in its Figure 3 a large number of locations in BCA showing substantial groundwater flow that were not apparently included in the proposers’ analysis.

It should be noted that while the analysis in the Noyes thesis (Appendix C) may support the notion of limited ambient mixing between the BCA and NA, it does not speak to the proposers' characterization of BCA flow, as presented in this proposal. The abstract of Appendix C provides the conclusion that the BCA and NA are not strongly hydrologically connected, which is not equivalent to stating that they are hydrologically separate. As stated in the Abstract: "All geochemical and isotopic results show that these distinct aquifers are not strongly hydrologically connected under current natural hydrologic condition."

Comment 26.3: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 26.4

A limited analysis of shale gouge ratios (SGRs) supports the claim that fault gouge creates a locally impermeable zone. However, such findings cannot be assumed to apply across entire fault planes that bound the graben, as noted above for extrapolation of local measurements of hydraulic conductivities. Piezometric surface maps grounded in substantial numbers of measurements are needed to identify whether hydraulic heads across the site and with depth are consistent with the proposers' claims.

Comment 26.4: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid

movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults.

Comment 26.5

A text summary of a 20-year Review of the Hydrogeologic System (Whetstone Associates 2019) was described that claimed to evaluate groundwater flow direction and the communications (or lack thereof) between the aquifers that exist within the Project Area. The summary states that, according to the report, there is a large unsaturated zone that exists between the BCA and NA, although no data were presented to support the assertion. Whereas, the Noyes thesis provides some support for the assertion of limited mixing between BCA and NA, the larger issue is the absence of information regarding piezometric surfaces and flow.

Comment 26.5: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution

regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults.

Comment 26.6

On page 31, underground uranium mine workings in the area were dismissed as having no impact because they are “either located in the footwall outside the project area or were beneath the Morrison confining unit.” However, Figure 3.3 in fact shows that the mine workings lie within the project area, at or near one of the ore zones (Figure 3.23 on page 63 and 3.41 page 89). Given that the proposers are asserting that the footwall is separated from the project area by an impermeable fault, it is surprising that they would show the mine workings to lay within the project area. Given that the mine workings extend “beneath the Morrison confining unit.” their potential role as a conduit between the BCA and NA must be carefully considered if the mine workings intercept the project area, as shown in Figure 3.23 on page 63 and Figure 3.42 on page 89. The analysis presented does not convincingly address the possibility of an impact from the mine workings. Assessment of potential impacts of mine workings on solution transmission from the project area (for example to the NA) needs to examine overlay of Lone Wolf ore zone and mine workings, as well as depth comparisons or wells and mine workings.

Comment 26.6: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and

hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults.

Comment 26.7

Section 5.0 Corrective Action Plan (starting on Page 97) initiates with the statement: “There are no USDW above the injection zone.” This statement is incorrect. There are domestic supply wells immediately adjacent to the project area (injection zone) in the same USDW in which injection is being proposed. The incorrect statements made in the application are worrisome in terms of indicating a potential unwillingness on the part of the proposers’ to genuinely consider and prevent potential impacts to other users of BCA. Section 5.0 explains that proposed injection rates per well will range between 50 to 500 gpm, individual well fields (injection/extraction) will operate for about 5 years, with multiple well fields operating at any given time. Concurrent copper recovery and aquifer restoration will begin about 5 years after initial well field operation.

The goal is to maintain an inward hydraulic gradient, which LVM proposes to accomplish by maintaining the injection flow by 0.5% to 5% less than the extraction flow. However, this is a negligible difference. Even if it does maintain an inward hydraulic gradient at the five measured points of hydraulic head, may not maintain inward flow and capture of injectate. Even with an inward hydraulic gradient, flow directions across the well field volume will be governed by both hydraulic head and hydraulic conductivity (primarily governed by rock permeability), where the latter can be expected to vary by orders of magnitude within the volume of a well field. Rather than assume that the proposed small differential between injection and extraction flow, the proposers should provide pilot studies demonstrating with a convincing number of monitoring wells the injection/extraction differential needed to recover a given fraction of the injectate. For a proposed five-well field, at least eight equally- spaced monitoring wells should surround the outer four wells. This should be done at multiple locations in the project area to capture spatial variation in BCA properties. While LVM's proposal will maintain injection pressures designed to avoid BCA fracture, this does not guarantee in any way that all injected flow will be recovered by the extraction well, as explained above.

Comment 26.7: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor

wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults. The Division has determined that there are no sources of drinking water or USDWs in the injection zone because the Draft Permit limits the injection zone to the project area and proposed Aquifer Exemption volume (DWQ 2020a). See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 26.8

In Section 6.3, it is stated that BCA may not be able to provide sufficient water for operation "since it does not recharge or have influent flow." This statement does not clearly align with the proposers' argument that it is surrounded laterally by inward hydraulic gradients and the Holocene age of its groundwater. Furthermore, in Section 7.2, it is stated that aquifer tests in BCA result in "good permeability ... which supports flow criteria required for successful ISR operations." These seemingly self-contradictory statements within the same application highlights the need for a clearer hydrologic analysis to draw consistent conclusions with quantitative estimates rather than inaccurate blanket judgements such as "no recharge", "good permeability", "closed hydrologic system", "no USDW", etc. The pressure response described in Section 7.2 at well tapping the GTO fault does indeed indicate hydraulic connection to PW-12 in BCA, and lack of hydraulic connection to Woods well on the footwall. However, this observation at one location on the graben boundary is insufficient to prove the proposers' assertions of inward hydraulic gradients and impermeable boundaries along the entire perimeter of the graben

Comment 26.8: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor

wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults.

UIC regulations do not pertain to water consumption, as explained in Section 2 of this document under Group Comments. Furthermore, tracking of water use and allocation of water rights is not part of the Draft Permit. Hydrologists have determined that the occurrences of Dakota, Burro Canyon, and Navajo Formations in Lisbon Valley, a graben, are separate from the regional aquifer system (Avery 1986). Moreover, as summarized in the Introduction of this document, wellfield controls, including overproduction of leach solutions from perimeter wells, will be used to contain leach solutions per operating conditions in the Draft Permit (DWQ 2020a: III. and Attachment E). The Division has determined that there are no sources of drinking water or USDWs in the injection zone because the Draft Permit limits the injection zone to the project area and proposed Aquifer Exemption volume (DWQ 2020a). See also the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

Comment 26.9

"Quantitative results provided for the "pump" or "aquifer" tests showed continued head loss under constant pumping, consistent with limited groundwater storage in the BCA. However, the continued head loss is expected for confined aquifers because they are over-pressured, and extraction reduces that pressure. The proposer's analysis did not clearly develop an estimate of water volume available for extraction relative to the volume needed for proposed ISR operations, and, most important, the potential impacts to water availability in adjacent domestic supply wells in the BCA and NA.

Comment 26.9: Division Response

UIC regulations do not pertain to water consumption, as explained in Section 2 of this document under Group Comment 3. Furthermore, tracking of water use and allocation of water rights is not part of the Draft Permit. The Division does not have the authority to regulate beyond the governing UIC statute and regulations and does not regulate water rights that are the responsibility of other regulatory agencies.

Comment 26.10

With respect to injectate (lixiviant), the normality of sulfuric acid and partial pressure of oxygen were not provided. It is not clear whether potential oxygen bubble coalescence and formation permeability reduction during injection were considered.

Comment 26.10: Division Response

The LVMC Draft Permit (DWQ 2020a) requires injectate characterization under Part III.G.5 as part of the monitoring and reporting requirements described in Part III.G and Attachment F. In addition, the Draft Permit conditions in Part III.G.6 require monitoring of injection pressure, rate, and volumes; these factors will serve as indicators of changes in the hydraulic properties of the injection zone during ISR operations (DWQ 2020a). Corrective actions will be required if these changes may cause or result in noncompliance with any permit condition.

Comment 26.11

Table 6.2 provides the anticipated composition of the injection fluid, with no substantiation or explanation of how these estimates were developed. Equally important will be the composition of injected water AFTER reaction with BCA, since it has implications for the sustainability of reinjection (page 124), as well as potential impacts if equilibrated injectate is not recovered. Notably, the equilibrated injectate will have a pH of 1 (Figure 11.2 page 127). Section 11.2 provides an equation that portrays oxidative dissolution of copper sulfide. It does not portray the many other sulfide bound elements (As, Pb, Cd, etc.) that will be mobilized in this proposed process and the major ions produced (e.g., SO_4^{2-}), which can also have health impacts. Nor does it portray the presence of organic matter and other reducing agents that maintain the current reducing conditions in the aquifer, and that will compete with copper sulfide for the oxidant (sulfuric acid, oxygen, Fe^{3+}). Furthermore, it does not portray the dissolution of abundant carbonate minerals that will consume added acid, greatly increase alkalinity and dissolved solids, and will likely confound reinjection and rinsing as proposed.

Comment 26.11: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. As described in the Division's response to Comment 26.10, the LVMC Draft Permit (DWQ 2020a) requires injectate characterization under Part III.G.5 as part of the monitoring and reporting requirements described in Part III.G and Attachment F. In addition, the Draft Permit conditions in Part III.G.6 require monitoring of injection pressure, rate, and volumes; these factors will serve as indicators of changes in the hydraulic properties of the injection zone (DWQ 2020a). Per Draft Permit condition Part III.G.5:

Lisbon Valley shall monitor the water quality of the injectate at least quarterly or more frequently if the source of the injectate changes. The water quality of the injectate shall be analyzed for the following constituents:

- (a) Inorganics: Sulfate, Acidity
- (b) Acid Soluble Metals (unfiltered sample): Iron, Copper
- (c) Field Measurements: pH, Temperature, Eh, Specific Conductivity (DWQ 2020a: III.G.5)

Per Draft Permit condition Part III.G.3 and Attachment F Monitoring, Recording and Reporting Plan regarding Point of Compliance (POC) monitoring:

POC monitoring will be conducted quarterly in accordance with UDWQ permit requirements. This will include water level measurements and groundwater sampling for constituents detailed in Table 12.2. Groundwater sampling will be conducted using low-flow submersible pumps. (DWQ 2020a: Attachment F, page 153)

Table 12.2 of the Draft Permit includes uranium, manganese, cadmium, arsenic, lead, and many other constituents expected to be in the injectate (DWQ 2020a: Attachment F, page 153).

The monitoring requirements in Part III.G of the Draft Permit will continue during groundwater restoration as required in Part III.J. These requirements also address successive comments pertaining to the nature of the injectate and constituents of concern that may be dissolved into the leach solutions (DWQ 2020a: Attachments F and H).

Comment 26.12

The injection depths are stated to range between 125 and 800 feet (page 101), or 200 and 900 feet (page 117). Given the stated (Figure 12.1 page 144) nominal 200 foot thickness of the Mancos Formation, 333 foot thickness of BCA, and the nominal 400 foot thickness of the Morrison Formation, these depths appear to have significant penetration into the Morrison Formation and possibly the NA. The proposed injection depths themselves appear to negate the proposers' argument that Morrison will act as a barrier to flow between BCA and NA.

Determination of zones of hydraulic and transport impact to water availability and water quality is proposed to occur during operation following aquifer exemption. These concerns should be addressed BEFORE aquifer exemption is requested, and should be addressed in pilot scale studies provided in the application for aquifer exemption.

Comment 26.12: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. While LVMC can choose to conduct pilot testing, it is not required to do so in the Draft Permit before commencing with full-scale operations because the governing UIC statute and regulations do not contain this requirement. The requirements prior to ISR are listed in the Draft Permit (DWQ 2020a: III.E) and 40 CFR § 146.34(b).

Comment 26.13

“With respect to the Draft Permit (DWQ_LVM_UIC_DraftPermit_DWQ-2020-020464_110420.pdf), the listed elements to be monitored are Fe and Cu (page 24 bottom). It is not clear why the list does not include other elements expected to be mobilized by sulfuric acid addition, for example U, Mn, Cd, As, and Pb.” It is surprising that these elements were not included for monitoring, given that these elements are demonstrated to be present in the mineralized zone and impact water quality in some areas of the BCA. Their concentrations are highly likely to be amplified in response to sulfuric acid injection in the proposed ISR. The restriction of monitoring to the target element Cu, and a relatively prevalent element (Fe) weakens confidence in the ability of the regulatory process to protect against transport and consequent water quality impacts.

With respect to the Statement of Basis (DWQ_LVC_UIC_StatementofBasis_FactSheet_DWQ-2020-020466_110420), the description of the Cu recovery process at the top of page 3 does not explain what sulfuric acid normality corresponds to “dilute.” This value is needed, since “dilute” depends on context and this context, with many competing dissolvable phases, likely requires a normality that would not be considered dilute in environmental settings.

This description mentions only Cu, whereas the other minerals comprising the ore are also likely subject to dissolution. The absence of recognition of mobilization of other trace elements within the mineralized zone reduces confidence in the regulatory process. It is stated (top of page 4) that “the Draft Permit is justified on the basis of the limited extent and use of the Burro Canyon aquifer in the proposed permit area, the occurrence of mineralization of potential commercial value and relatively poor water quality.” These statements are not accurate as reviewed above.

Comment 26.13: Division Response

Per Draft Permit condition Part III.G.5:

Lisbon Valley shall monitor the water quality of the injectate at least quarterly or more frequently if the source of the injectate changes. The water quality of the injectate shall be analyzed for the following constituents:

- (a) Inorganics: Sulfate, Acidity
- (b) Acid Soluble Metals (unfiltered sample): Iron, Copper
- (c) Field Measurements: pH, Temperature, Eh, Specific Conductivity (DWQ 2020a: III.G.5)

Per Draft Permit condition Part III.G.3 and Attachment F, Monitoring, Recording and Reporting Plan regarding Point of Compliance (POC) monitoring:

POC monitoring will be conducted quarterly in accordance with UDWQ permit requirements. This will include water level measurements and groundwater sampling for constituents detailed in Table 12.2. Groundwater sampling will be conducted using low-flow submersible pumps. (DWQ 2020a: Attachment F, page 153)

Table 12.2 of the Draft Permit includes uranium, manganese, cadmium, arsenic, lead, and many other constituents expected to be in the injectate (DWQ 2020a: Attachment F, page 153).

The monitoring requirements in Part G of the Draft Permit also address successive comments pertaining to the nature of the injectate and constituents of concern that may be dissolved into the leach solutions (DWQ 2020a: G).

Comment 26.14

It was stated (page 4) that “the Burro Canyon aquifer is contained within a closed water recharge system by the regional geologic anticlinal structure within a graben bounded by faults with low hydraulic conductivity owing to the occurrence of fine grained fault gouge material.” These statements are not accurate as reviewed above. It is stated (page 4) that “Any vertical migration will also be detected by deep monitor wells within the Morrison and Navajo Formations.” This is an overly optimistic statement that fails to recognize the challenge in detecting leakage in the subsurface with limited wells given limited dispersion relative to the large transport scales involved. Such unrealistic statements weaken confidence in the regulatory process. Aquifer Exemption for the Burro Canyon Aquifer (page 4) does not seem to be based on an objective and substantiated analysis as reviewed above.

Comment 26.14: Division Response

This comment is directed primarily toward the Technical Report (LVMC 2020), which is not part of the public notice package. The LVMC Draft Permit (DWQ 2020a) protects groundwater outside the proposed Aquifer Exemption boundary by rigorous injection well construction methods and wellfield controls required in Part III.D and Part III.F of the Draft Permit, respectively, and described in Attachments D and E of the Draft Permit. In addition, the Draft Permit conditions in Part III.B require a Monitoring, Recording,

and Reporting Plan (DWQ 2020a: Attachment F) for the detection and reporting of endangering fluid movements and noncompliance. Per that plan, LVMC will be required to install and maintain monitor wells at the proposed Aquifer Exemption and Draft Permit boundary. If exceedances of water levels or water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: Part III.C) and implement corrective actions to bring that well into compliance within the schedule specified in the Draft Permit (DWQ 2020a: Part III.C). Furthermore, the Draft Permit requires pumping wells at the periphery of the in situ copper recovery wellfields where they occur at the fault boundary to be pumped at a higher rate than the central injection wells, which will induce an inward gradient into the wellfield and control leach solution regardless of the natural potentiometric surface (DWQ 2020a: III.F and Attachment E). In Part III.G and Attachment F of the Draft Permit (DWQ 2020a), the Division requires monitoring of water quality and hydraulic head within the Morrison Formation in the unlikely event of vertical leakage through the aquitard matrix or along faults.

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

COMMENT 27: R. LOGAN WILDE, COMMISSIONER, UTAH DEPARTMENT OF AGRICULTURE AND FOOD, JANUARY 4, 2021

The Utah Department of Agriculture and Food (UDAF) has reviewed the Lisbon Valley Mining Underground Injection Control Class III Area Draft Permit. UDAF is desirous to work collaboratively with the Utah Division of Water Quality (DWQ) throughout this process. There are several concerns with issuing this draft permit.

The Lisbon Valley is an important area for livestock grazing. There are already various water systems established that utilize groundwater. If the draft permit is issued, there is a severe risk that the water may be contaminated, and once this happens it cannot be undone. Monitoring can be done to prevent water contamination; however, once the water is contaminated, nothing can be done to reverse the effects.

Livestock watering rights have existed in the area for many years and are older rights than what the mine has. This means that the livestock watering rights should be given priority. In addition to having first right of use, these rights should have unimpaired use of the water they are entitled to. Adding acid to a water system without control of where it goes with other users in the system is dangerous and reckless.

In addition to livestock watering rights, culinary wells in the area are at risk for contamination. There are residents in the area that receive their drinking water from the aquifer and could be exposed to contaminated water. The health and safety of humans and animals needs to be a priority consideration in this situation.

UDAF funded a Grazing Improvement project in 2014 in Lisbon valley, providing stock water to 1,089 acres. The project included 11,756 feet of HDE pipe, a 12,658 gallon storage tank, and 4 stock tanks. The water right 05-3575 providing the stock water is not listed in the Lisbon Valley Mining Draft Permit. There are several water rights not listed in the draft permit that either fall within the project area or are adjacent to the project area. All are within the two-mile AQR boundary. ¹ Livestock require a certain level of water quality and are sensitive to copper and acids. UDAF is concerned that ejection of acids in the aquifer will impact both stock water and drinking water devastating the livestock industry in the area.

Water rights not listed in the draft permit:

- 05-3575: beneficial use, stock water, 400 ELUs
- 05-296: beneficial use, stock water, 75 ELUs
- 05-3692: beneficial use, municipal, 25 seat restaurant, 1 washer, 1 camp bath house, 3 cabins, 3 hard side tents, 2 teepees, and 25 people x 365 use
- 05-2970: beneficial use, domestic 1 EDU, stock water, 10 ELUs, irrigation .25 acres

If the permit is granted, it should include a plan to provide stock and drinking water to the affected parties. The permit should include a perfected water right with sufficient quality and quantity to meet the current needs and include funding for piping, drilling, and O&M cost.

The current draft permit could have serious negative economic impacts on the local communities. If livestock are getting sick or dying from the contaminated water, there will be significant economic losses to the agricultural industry. San Juan County is heavily dependent on agricultural production with 10.7% of all employment in the county coming from agriculture. ² This is a staggering amount compared to the rest of the country with just 1.3% of jobs coming from agriculture nationwide. ³ Livestock production alone from San Juan County contributed over \$10,994,000 to the local economies in 2018. ⁴ This source of revenue is extremely important for the economic survival of this rural county. The median household income for San Juan County is \$42,982, which is significantly lower than the state of Utah median household income of \$71,381. ⁵ This shows how heavily San Juan County relies upon agricultural production to sustain the local communities.

¹ <https://deq.utah.gov/public-notices-archive/water-quality-public-notices> Attachment B, Figure 3.2 page 16–17.

² Economic Profile System. 2018. Agriculture Report. Headwater Economics.

³ Ibid.

⁴ Ibid.

⁵ Utah Department of Workforce Services. 2018. Annual Income and Wages by County.

Overall, there are serious concerns from the people that this decision will directly affect, and this decision should not be rushed. UDAF appreciates the opportunity to provide comment and looks forward to continually working with the Utah Division of Water Quality.

Comment 27: Division Response

The Division has written the LVMC Draft Permit (DWQ 2020a) in compliance with Utah Code R317-7 and federal UIC regulations incorporated by reference. The basis for the Draft Permit has been documented according to all legal requirements in the Draft Permit, in the FSSOB Public Hearing, and in the Division's responses to comments herein.

See the Division's response to Group Comment 8 indicating that the Aquifer Exemption Request will be amended for clarity and republished.

The Division does not have the authority to regulate beyond the governing UIC statute and regulations in this permit; water rights, surface water discharge, surface land disturbances, and other environmental concerns will be considered by other jurisdictions and permits.

The Stevenson well (water rights 05-3692, 05-2970) is within the Draft Permit area of review but serves as a point of diversion within a different aquifer, the N Aquifer, and is located upgradient of the BC Aquifer in Lisbon Valley and is geologically and hydraulically isolated from the occurrence of the BC Aquifer within Lisbon Valley.

UIC well permit applications only require the disclosure of artificial penetration (i.e., well) locations in the area of review (R317-7-9.1(D)(10); 40 CFR § 146.34.a.3) and not water rights.

The Wilcox well (water rights 05-3907 and 05-3575) is within the area of review but outside the Draft Permit Area and Aquifer Exemption boundary and volume. The Division considered the potential risks of water quality impact to that well from in situ copper recovery operations. The LVMC Draft Permit (DWQ 2020a) is inherently protective of groundwater outside the Aquifer Exemption boundary because of the well construction methods and wellfield controls required in the Draft Permit (DWQ 2020a: III.D and III.F) and described in Attachments D and E of the Draft Permit. In addition, the conditions in Part III.B of the Draft Permit require a Monitoring, Recording, and Reporting Plan (DWQ 2020a: Attachment F). Per that plan, LVMC has proposed monitor wells at the Aquifer Exemption and permit boundary. If exceedances of water quality are detected at the monitor wells, LVMC must develop a Corrective Action Plan (DWQ 2020a: Attachment C) per Draft Permit conditions (DWQ 2020a: III.C) and implement corrective actions to maintain groundwater quality outside the Draft Permit Area and Aquifer Exemption volume in compliance within the schedule specified in the Draft Permit (DWQ 2020a: III.C).

The “buffer zone” is that portion of the permit boundary and aquifer exemption volume that is between in situ copper recovery wellfields and injection and recovery zones.

The drinking water quality standards (40 C.F.R. § 141 and Utah Primary Drinking Water Standards R309-200-5) that must be met at the monitoring points are more rigorous than stock watering standards.

The long-term impacts from in situ copper recovery will be mitigated by groundwater restoration after copper recovery operations are completed as required and described in the Draft Permit (DWQ 2020a: III.J and Attachment H).

REFERENCES

The following references were used by the Division for developing the Draft Permit and responses to public comments.

ADEQ. 2004. Arizona Mining Guidance Manual BADCT. Arizona Department of Environmental Quality. Publication #TB 04-01. https://static.azdeq.gov/wqd/app_badctmanual.pdf.

ASTM D5092 / D5092M - 16 Standard Practices for Design and Installation of Groundwater Monitoring Wells.

Avery, C. 1986. USGS Bedrock Aquifers of Eastern San Juan County, Utah, State of Utah Department of Natural Resources. Technical Publication No. 86.

BLM. 1997. Final Environmental Impact Statement for SUMMO USA Corporation: Lisbon Valley Open Pit Copper Mine in San Juan County, UT. Bureau of Land Management, Moab District.

Bureau of Pollution Control, 1987. Quality Assurance Plan for the UIC Program, Approved March 22, 1988, EPA Letter to Mr. Mize from Mr. Max Dodson, EPA Water Management Division.

DWQ. 2020a. Utah Division of Water Quality Class III Area Permit Underground Injection Control (UIC) Program, UIC Permit Number: UTU-37-AP-5D5F693. Permit issued to Lisbon Valley Mining Company, L.L.C., October 2020.

DWQ. 2020b. Statement of Basis and Fact Sheet for a Underground Injection and Control (UIC) Class III Draft Area Permit. Lisbon Valley Mining Company, LLC. October 2020.

DWQ. 2020c. State of Utah Underground Injection Control Program Aquifer Exemption Request to U.S. EPA Region 8. Prepared by the Utah Division of Water Quality.

EPA, 2016. Underground Injection Control Program Area Permit, Class III In-Situ Production of Copper Permit No. R9UIC-AZ3-FY16-1. Gunnison Copper Project Cochise County, Arizona. Issued to Excelsior Mining Arizona, Inc. Concord Place, Suite 300 2999 North 44th Street Phoenix, Arizona 8501.

EPA, 2016. Underground Injection Control Program Area Permit, Class III In-Situ Production of Copper Permit No. R9UIC-AZ3-FY11-1. Florence Copper Project, 1575 West Hunt Highway Florence, Arizona 85132. Issued to Florence Copper Inc., 1575 West Hunt Highway Florence, Arizona 85132.

LVMC. 2019. Underground Injection Control Program, Class III Permit Application for In-situ Copper Recovery. Permit Application submitted by Lisbon Valley Mining Co. LLC. Submitted to the State of Utah Division of Water Quality. Cover date January 2018. Submission date December 2019.

LVMC. 2020. Class III Underground Injection Control Permit Application Technical Report. Prepared by Lisbon Valley Mining Company LLC, September 29, 2020.

State of Utah Underground Injection Control Program, Class III Permit Application Package for In-Situ Copper Recovery. January 2018. <https://deq.utah.gov/water-quality/forms-and-applications-utah-underground-injection-control-uic-program>.

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